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Street level influences affecting implementation of an ecosystem approach within the North Devon UNESCO biosphere reserve

Volume 1 of 1

Submitted by Nicholas Aubrey Kirsop-Taylor to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Politics in March 2018

I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Abstract

Implementing land management solutions that address the on-going decline global biodiversity decline remain a priority for all sectors of global environmental governance. Through their global network of biosphere reserves, the UNESCO man and biosphere programme provides global locations for testing these solutions to the global biodiversity crisis. One such solution being tested within biosphere reserves is the ecosystem approach of the Convention on Biological Diversity. The ecosystem approach provides a framework for action based upon the integration of ecological, social, and economic aspects of integrated management. However, research suggests that this ecosystem approach as a policy-notion of best practice integrated management remains significantly under implemented at all scales and in all states around the world.

This thesis makes an original contribution to the ecosystem approach implementation literature by framing its *implementation deficit* through a political science lens and investigating implementation in-depth within an English biosphere reserve case study. This is the first dedicated investigation of implementation of an ecosystem approach with an English biosphere reserve. Based upon a review of the literature, individuals and organisations became the primary units of analysis for understanding the *implementation deficit*. In locating the locus of power for influencing implementation within this biosphere reserve, a modified version of Lipsky's street Level bureaucrat theory from the political science implementation theoretical tradition was utilised. By offering a 'thick', in-depth analysis of how the ecosystem approach is understood by the partnership members of the North Devon UNESCO biosphere reserve, this thesis presents a critical analysis about the policy implementation of an ecosystem approach.

This research utilised a 'thick' qualitative research design to evaluate of how and why an ecosystem approach was being implemented within the case study biosphere reserve. This methodology was fundamentally structured around evaluation of the implementation of each of the twelve Malawi principles of an ecosystem approach. Data was collected through a mixed method approach of thirty semi-structured interviews with participants in the North Devon UNESCO biosphere reserve, through observation of four biosphere reserve partnership meetings, and through the review

of nineteen policy documents and management plans. These were supplemented with ten elite interviews with national figures engaged in the policy transposition and implementation of the ecosystem approach. The qualitative data was thematically analysed against a series of pre-set codes leading to a number of emergent key themes driving implementation.

Fundamentally the results found only sporadic participant conceptualisations of what an ecosystem approach is, and how to operationalise it, which supported other recent scholarly contributions to the discourse. It was also found that although the case study biosphere reserve was having some success in relation to implementing certain aspects of an ecosystem approach (prioritising ecosystem services), in others (balancing use and conservation) it was still facing challenges to implementation. Overall, it was found that the biosphere reserve was implementing a unique version of an ecosystem approach, which reflected its specific configuration of interests, legacy projects, local politics, and geography. The thematic analysis evaluating implementation of the twelve Malawi principles led to three distinct cross-cutting themes emerging from the qualitative date. These themes spoke to the fundamental essence of how and why implementation of this policy-notion was occurring at the street level. These three themes were distinct from each other based upon organisational size and composition and led to original and significant understandings about the *implementation deficit*. The findings and conclusions drawn from this research have ramifications to the literatures of political science and public administration. Furthermore, they have ramifications for how contemporary street level theory is conceptualised and utilised, as well as how regimes of global environmental governance are designed with street level implementers in mind.

Acknowledgements

Undertaking this PhD has been a truly momentous experience for me as an individual and as an academic. Its completion marks for me a moment of taking another step from the person I am to the person I want to be, and its completion gives me a sense of purpose. There are many people and organisations who have helped me on this journey and I would like to thank them.

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in year four, when the rest of the world started crowding in and threatening to get in the way of finishing. I would also like to thank my initial second supervisor, Dr Rob Fish at the University of Kent (Canterbury). Although Rob had to leave supervision of me in the first year of this doctorate, it was his enthusiasm for the ecosystem approach, the North Devon UNESCO biosphere reserve, and the key individuals championing the approach there that inspired much of the early direction of this thesis.

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Finally, I would like to commend whatever good or of use that comes from this thesis to my two children Theodore and Martha. This is your world that my generation have been destroying, and although we are now trying to make better decisions and address the many challenges that we have created, we have let it a little late. You and your generation will likely have to spend more precious time and energy trying to resolve the mistakes of my generation that will linger long after we have gone. That said, please try to not judge us too harshly, as this thesis suggests, we were trying to find answers, but as always, the answers are often complex.

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Acronyms

Area of outstanding natural beauty (AONB)

Conference of parties (COP)

Convention on Biological Diversity (CBD)

Department of Environment, Food and Rural Affairs (Defra)

Devon Wildlife Trust (DWT)

Ecosystem services framework (ESF)

Environmental voluntary sector (EVS)

Environmental voluntary sector organisation (EVSO)

Interagency environmental management taskforce (IEMT)

International Union for the Conservation of Nature (IUCN)

Millennium Ecosystem Assessment (MA)

Multilateral environmental agreement (MEA)

National Council for Voluntary Organisations (NCVO)

National ecosystem assessment (NEA)

National ecosystem assessment follow on (NEAFO)

National Farmers Union (NFU)

North Devon Biosphere Reserve (BR)

Northern Devon Nature Improvement Area (NIA)

Street level bureaucrat (SLB)

Street level theory (SLT)

Subsidiary body on scientific, technical and technological advice (SBSTTA)

The economics of ecosystems and biodiversity (TEEB)

United Kingdom Man and Biosphere programme (UKMAB)

United Nations Environment Programme (UNEP)

United Nations Educational, Scientific and Cultural organisation (UNESCO)

UNESCO Man and Biodiversity programme (MAB)

Voluntary sector organisation (VSO)

World Network of Biosphere Reserves (WNBR)

Chapter One: Introduction

‘The current extinction has its own novel cause: not an asteroid or a massive volcanic eruption but "one weedy species.’ Kolbert, 2014

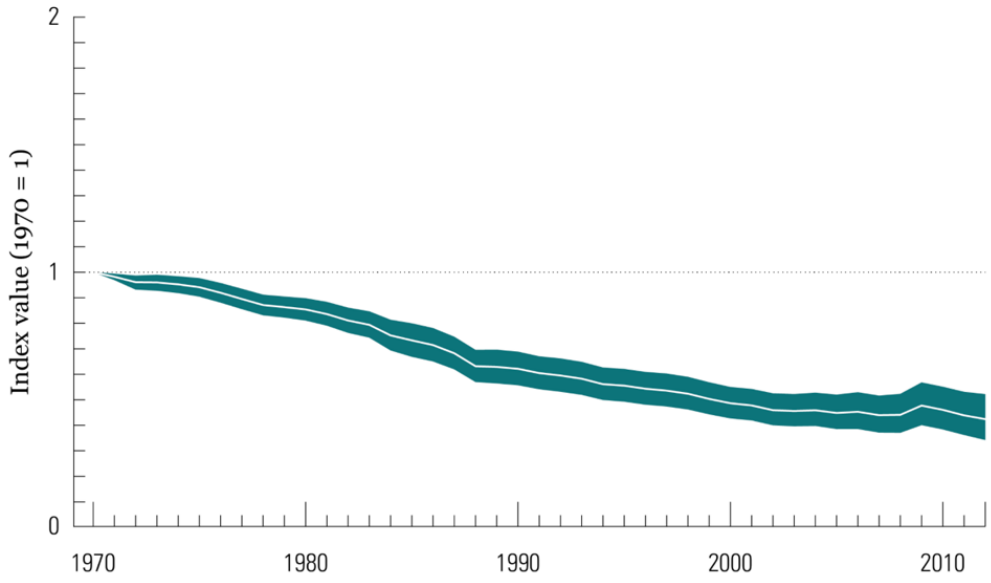
1.0 About this thesis

This doctoral thesis is concerned with how the ecosystem approach of the Convention for Biological Diversity (CBD) is being understood and operationalised in an English natural resource management partnership. By utilising a political science approach it hypothesises that the ultimate power to decide whether and how an ecosystem approach is implemented lays with the final users of an ecosystem approach at the ‘street-level’ of the policy-practice interface. This means that the power over deciding how and in what form an ecosystem approach is implemented resides with those people and organisations at the front-line of delivering integrated natural resource management. As this thesis shows individuals and organisations at the policy-practice interface play critical roles in deciding the form and impact of how an ecosystem approach is implemented. It is first important to contextualise why an ecosystem approach to integrated natural resource management exists and is worthy of investigation, and this starts in Section 1.1.

1.1 Scene setting: The Holocene extinction

The diversity and abundance of life, or ‘biodiversity’, is a globally recognised and acknowledged metric of the planetary environmental health (Sala et al, 2000). However, global biodiversity is in decline (Butchart et al, 2010), and as illustrated in Figure 1.1 it has declined by fifty-eight percent between 1970 and 2012. Species extinction rates over this period have been up to a thousand times or more of the natural rate (Pimm et al, 1995) meaning that, on average, animal populations are roughly half the size they were in 1970 (WWF, 2016).

Figure 1.1 Global living planet index 1970-2012



Global Living Planet Index, (2016), WWF International

The decline in global biodiversity outlined in Figure 1.1 is so severe that it has been named as the 'sixth great global extinction event' (Erlich, 2017), or as Steffen et al (2007) and Kolbert (2014) suggest, the *Holocene extinction*. As per Kolbert's quote (2014) at the start of this Chapter, this extinction event is unique for being the first directly caused by one species upon all the others. This speaks to the heart of the issue, as the *Holocene extinction* is essentially anthropogenic (Vitousek et al, 1997), and although clearly there are many anthropogenic reasons of this extinction, it is fundamentally being driven by the functioning, processes, and activities of contemporary human civilisation (Pereira et al, 2010). These include a range of indirect civilisational drivers, such as rates of per capita consumption, and globalised economic activity and trade (Slingenberg et al, 2009; CBD Global biodiversity outlook three, 2010). A range of specific, or direct, human activities are also contributing to this decline in biodiversity (Newbold et al, 2016).

The impacts of the *Holocene extinction* are being felt by both global biodiversity, as well as people and society who gain value (in many forms) from biodiversity. The preponderance of substantive literature exploring the effects of the *Holocene extinction* suggests that its impacts will be detrimental to people and society (MA,

2005). In fact, the most comprehensive global financial assessment of biodiversity loss (The Economics of ecosystems and biodiversity - TEEB, 2010), has predicted that the continuing loss of biodiversity will cost the global economy up to fourteen trillion Euros. This impact will be equivalent to seven percent of the projected global GDP in 2050 (TEEB, 2010).

Based upon the reality of declining global biodiversity (Figure One), the anthropogenic causes of the *Holocene extinction* and the potential damage it could cause people and societies (Millennium Ecosystem Assessment – MA, 2005)[1], the case for halting, if not reversing the decline in biodiversity is compelling, and one of the most urgent of this age (Vella, 2015). Indeed, governments, policy makers, nongovernmental organisations and citizens, as well as institutions of civil society, are now responding to meet the challenge of the *Holocene extinction* (CBD, 2010). They are doing so through a range of global-scale collective action frameworks, national policy programmes, and local activities and projects. The institutions and organisations leading the responses to the global decline in biodiversity have become cognizant of the need for frameworks to guide best practice in natural resource management (Butchart et al, 2016). To be effective these frameworks need to be inclusive of the different (and often contested) social, ecological, temporal, economic, and spatial considerations that characterise the complex nature anthropogenic use of natural resources (MA, 2005). Indeed, the research of Raum (2017) and others (Frost, 2006) highlight how approaches that consider and integrate a range of perspectives, stakeholder positions, and disciplinary contributions into natural resource management decision-making are contemporarily normative, and perhaps paradigmatic.

That said, creating integrated management frameworks that reflect the complex and competing mandates of different interests, and which allow for compromises and trade-offs, but ultimately deliver outcomes, is manifestly difficult. Based upon these challenges and others, frameworks for integrated management can be incredibly

[1] The MA was a significant assessment of the human influence upon the natural environment commissioned by the UN (2000). The MA helped identify pressing requirements for future biodiversity and integrated research (Carpenter et al, 2006), and generated significant impact and influence upon national biodiversity policy-makers and policy (Carpenter et al, 2009)

difficult to put into operation (Margerum, 1999; Hagmann et al, 2002; Stucki and Smith, 2011). This was identified by Meadows (1997), who found that in designing more integrated frameworks it was important to ensure that a balance is struck between including enough complexity to mirror the problem, whilst not making it too overly complex as to impair its acceptance (by policy makers) and implementation (by its intended users). Integrated, multi-disciplinary frameworks for natural resource management need to strike a balance between necessary complexity and simplicity (or ease of access and use). Contemporary frameworks and structures for guiding management practices along these lines are ubiquitous – from community based co-management to sustainable development, there are many formats for delivering integrated management. One such framework for integrated management practice is the ecosystem approach of the CBD, which is the primary subject of this thesis. The ecosystem approach framework and the CBD are explored as an introduction in Section 1.2, but then in greater depth in Chapter Two.

1.2 The ecosystem approach

The ecosystem approach to integrated natural resource management is the framework through which the decisions and activities of the CBD are implemented. Taking an ecosystem approach to natural resource management is articulated by twelve principles of best practice (hereafter Malawi principles), and five points of guidance for operationalising the twelve Malawi principles. These Malawi principles are designed to offer a series of high-level conceptual principles for guiding natural resource management best practice across the integrative themes of ecology, society, scale, and economics. Waylen et al (2014[A]) suggest that the Malawi principles are one of the most comprehensive frameworks for integrated management, which means they should be relevant and applicable to any land management situation, and managed environment (Smith and Maltby, 2003).

From an international relations perspective, the ecosystem approach is an environmental management *regime* promoted by the CBD. This *regime* has percolated down through multiple levels of environmental governance and has been transposed in numerous national legislative frameworks around the world (DeLucia, 2015).

Signatory member states to the CBD have been encouraged, but not mandated (i.e. non-binding), to create national iterations of the approach, and seek to promote it domestically (Chapter Two explores this in greater depth). That said, the research literature on the domestic implementation of the ecosystem approach has consistently shown that it is a *regime* that continues to be poorly implemented in all signatory states to the CBD, and at all scales of governance (Smith and Maltby, 2003; Shepard, 2004; 2008).

The ecosystem approach promotes long-term integrated management across a range of social, ecological, economic and scalar dimensions. However, ecosystem approaches are recognised as particularly difficult to implement due to the breadth of interest, focus on long term management, and consideration of a range of complex issues (Pushpam et al, 2008). Moreover, the complex multi-disciplinary, multi-scalar nature of the ecosystem approach make the design of evaluative frameworks a challenging undertaking (Waylen et al, 2014[B]). Certainly there have been recent UK-based attempts at designing ecosystem approach based evaluative frameworks (e.g. Natural England, 2016[A]), though these are few and far between, and there is no broad consensus or convergence on any one evaluative approach. These difficulties have meant that historically there has appeared to have been a reticence in the research community to undertake evaluations of terrestrial ecosystem approach evaluations (though this might be on the cusp of starting in Wales and Scotland).

This paucity of research is problematic because the CBD has recently embarked on a new programme of increased focus on the implementation of its *regimes* including the ecosystem approach. This new programme of implementation-focus is being conducted under the auspices of the 'Subsidiary body for implementation' (2014). Although many international conservation designations and projects have (theoretically) been operationalising an ecosystem approach for decades, there is a paucity of contemporary research to direct the new Subsidiary body on implementation in evaluating how successful these operationalisations have been. Rosendal (2013) has suggested that this paucity of research critically appraising implementation could stymie policy learning within the Subsidiary body on implementation about how to continue promoting an ecosystem approach. This thesis agrees with those scholars

(Scott et al, 2014; Waylen et al, 2014[A,B]; Hunt and Howard, 2015) who argue that the evaluative challenges to studying terrestrial applications of ecosystem approaches should not be an insurmountable barrier to evaluation.

As noted, the research literature contains few evaluative examples of terrestrial ecosystem approaches in practice. That said, there is one particular form of designated location that the literature (Kerr, 1998; Smith and Maltby, 2003; Flitner et al, 2009) suggests has been particularly amenable to evaluations of an ecosystem approach - United Nations Educational, Scientific and Cultural Organisation's (UNESCO) international network of biosphere reserves. There is a strong and explicit connection between the MAB programme and ecosystem approaches. This means that biosphere reserves are viewed by both MAB and the CBD as being in prime positions for implementing ecosystem approaches and there is a small but critical literature using biosphere reserves for evaluating the realities and practicalities of implementing ecosystem approaches. In the interests of contributing to this existing critical literature for evaluating implementation of an ecosystem approach, a UNESCO biosphere reserve was selected as the case study are for this thesis. Section 1.3 explores UNESCO, biosphere reserve concept, and the research connecting them with the ecosystem approach.

1.3 UNESCO Man and biosphere programme

UNESCO is an arm of the United Nations charged with an educational, scientific and cultural remit. Since 1971 UNESCO has been has been operating the man and biosphere programme (MAB). The MAB programme aims to better connect people to their natural environments through showcasing integrated management in practice on internationally designated sites. These sites are known as biosphere reserves, and there are now six hundred and sixty nine such sites in one hundred and sixteen different countries around the world. They are funded and managed by their national host country governments, with a small degree of administrative support from UNESCO. This means biosphere reserves enjoy variable support from governments, with some opting to strongly support them (financially, and in law) and others offering them little support at all, which is the case in the UK (Price, 2002; Hambrey et al,

2008). However, to remain part of the world network of biosphere reserves (WNBR) national biosphere reserves still need to adhere to a structure common to all biosphere reserves. This is a common three part structure that comprises a core zone, a buffer zone and a transition zone, and all six hundred and sixty nine biosphere are structured along these lines.

Both UNESCO and the CBD are organs of international governance that share, in places, overlapping remits. Once such overlap is in recognition of the explicit interconnectivity between society and the natural environment. Recognition of this overlapping consideration for interconnectivity of society and nature (by the CBD and UNESCO) has been codified through formal statements of mutual interest and agreement (CBD UNESCO joint programme, CBD Decision X20). Another overlapping interest is the agreement (between both the CBD and UNESCO) that biosphere reserves should represent unparalleled locations for testing the use of ecosystem approaches. Kerr (1998) has suggested that both UNESCO and the CBD envisaged that biosphere reserves should be ideal locations for testing the application of an ecosystem approach in varied biospheres, locations, and under varied governance regimes.

However, despite the explicit and implicit overlap between the ecosystem approach and biosphere reserves, there is remarkably little international literature evaluating how biosphere reserves are operationalising ecosystem approaches. Certainly, there is a greater literature exploring implementation of ecosystem approaches in biosphere reserves compared to many other specific forms of designated location (excluding marine environments), though this is still a small literature. Smith and Maltby (2003) evaluated the implementation of an ecosystem approach within four biosphere reserves as part of their global evaluation of the ecosystem approach for the CBD and International Union for the Conservation of Nature (IUCN). They found that, whilst many biosphere reserves were implicitly already using elements of an ecosystem approach, there remained little understanding at about it from national policy makers. In contrast, Fee et al (2006) conducted a comparative ecosystem approach evaluation of Canadian and German conservation designations (which included biosphere reserves) and found that the implementation of an ecosystem approach had only

penetrated as far as the national scale of environmental governance and had made no discernible impact at local scales. Fee et al (2006) concluded that the policy-notion of an ecosystem approach had not penetrated below the national scale due to a number of reasons including the poor use of instruments to deliver an ecosystem approach through domestic policy. Flitner et al (2009) conducted a study of German biosphere reserves for use of an ecosystem approach and found contradictory understandings and uses of an ecosystem approach between designated locations (p86). Nevertheless, Flitner et al (2009) concluded that the ecosystem approach and the biosphere reserves were highly synergistic and compatible concepts (p88).

Whilst these international studies have offered some insights into the possible dynamics of poor implementation (Smith and Maltby, 2003; Shepard, 2004; Fee et al, 2006; Shepard, 2008; Flitner et al, 2009), the research literature offers no comprehensive evaluations of how UK biosphere reserves (UKMAB) are implementing ecosystem approaches. Although not strictly evaluating biosphere reserves, two recent UK studies have sought to evaluate implementation of the ecosystem approach. Indeed, both the 'Ecosystem approach review' conducted by the James Hutton Institute (leading to Waylen et al, 2014[A;B]; Waylen et al, 2015), and the 'Tools: applications, benefits, and limitations for ecosystems' project (TABLES) carried out as the tenth work package of the National ecosystem assessment follow-on (NEAFO) (2014) (leading to Scott et al, 2014; Scott, 2015) had important impacts on this thesis. Both of these programmes found that the ecosystem approach is being used inconsistently by projects and designations around the UK. In both cases, a central challenge lay in the uncritical and poor understanding of the ecosystem approach, both conceptually, and as a policy (a point supported subsequently by Fish and Saritisi, 2015). Scott et al (2014:11) suggested that this poor comprehension has led to:

> 'Hindered efforts to communicate [the ecosystems approach's] efficacy and value to decision-makers, both as a new paradigm for integrated land and water management, and its additionality for professional practice'

The suggestion of confounding language and interpretations acting as a barrier to implementation is a point well made in the international ecosystem approach implementation literature (IEMT, 1997; Smith and Maltby, 2003; Piet et al, 2008), as well as the British literature (Farmer et al, 2012; Scott et al, 2014; Waylen et al, 2014[A]; Fish and Saritisi, 2015). Scott et al (2014:12) named this state of poor language comprehension and confusion with other similar sounding notions as *ecosystem science*. In Scott et al's (2014) original contribution *ecosystem science* was used as a heuristic for a multitude of similar sounding terms and terminology. Other scholars have since sought to explore the nature of the relationships between the different terms and policies that are commonly associated with an ecosystem approach, such as ecosystem services (Lawton and Rudd, 2014; DeLucia, 2015). This thesis contributes to this emerging discourse by offering an empirically grounded exploration into the nature of *ecosystem science*.

There is only a small literature exploring implementation (or *implementation deficit*s) of ecosystem approaches in UNESCO biosphere reserves. Therefore, in the interests of understanding which factors and dynamics might be affecting implementation, a wider review of the natural resource management literature was undertaken. This review specifically targeted literature concerned with implementation of an ecosystem approach in all global marine and terrestrial environments and contexts. The literature review's objective was to try and understand the wider dynamics that might be driving implementation (this can be seen in Section 2.9). From this literature review an original typology of the barriers to implementation was synthesised. Similar to other studies from the natural resource management field (Gottret & White, 2001; Keysar, 2005; Clark & Stankey, 2006; Fleeger & Becker, 2008; Stucki & Smith, 2011) this typology suggested that *individuals* and *organisations* (i.e. *people*), and *tools* and *governance* (i.e. *facilitators*) are the key 'categories of barrier' affecting the poor implementation of the ecosystem approach. The typology specifically highlighted how the *individual*-focused barriers, and *organisational*-focused barriers to implementation were relatively underrepresented in the research literature. Thus, in the interests of both advancing scholarly understandings about why the ecosystem approach is failing to be implemented, whilst also making an original contributions to the literature,

organisational and *individual* scales were selected as the units of analysis for this research.

1.4 A political science perspective

The review of literature undertaken in this thesis highlighted how the majority of ecosystems approach literature came from 'natural resource management' and 'environmental science' driven studies, and in natural resource and environmental science-type journals. Indeed, the literature broadly excluded the field of political science for offering understandings about why the ecosystem approach was being poorly implemented. This omission was curious. It was curious because the ecosystem approach was designed to become domestic policy in signatories to the CBD (Shepard, 2008), and the field of policy implementation studies (a subset of political science) has a deep and rich tradition of theory for explaining the implementation (or not) of domestic policy. Certainly, there was a small number of political science studies exploring the poor implementation of the ecosystem approach in the literature review, but these very few (Wilson, 2010; Kidd et al, 2011; Cowan et al, 2012). Overall, the literature review suggested that despite the value a political science perspective might bring to this discourse, it was relatively under-utilised in the literature. Therefore, a political science perspective, and theoretical approach from the field of implementation theory, was adopted for this thesis. Indeed, implementation theory is replete with theory offering explanations of how and why *individuals* and *organisations* respond to internationally-originated policy imperatives; and of particular interest, how this can lead to under-implementation.

Policy implementation involves the transformation of policies into outcomes (Parsons, 1995). That said, contemporary policy implementation can be an incredibly complex process (Sabatier, 2007), with most policy implementation scholars agreeing that perfect implementation is difficult to achieve (Wu et al, 2012), is rarely successful (Lin, 1996), or may not be possible at all (Hill, 2013). This is caused by factors including the 'type' of policy being implemented (Parsons, 1995; Hill, 2013), the 'context' of implementation (Sabatier, 1986), or the relative level of public sector decentralisation (Wu et al, 2012). The deficit between policies (outputs) and results of the policy

(outcomes) is described as an *implementation deficit.* The findings of the literature review (Chapter Two) found that, from this political science perspective, the ecosystem approach (at domestic scales) suffers from significant *implementation deficit.* This means that there is a significant differential between the ecosystem approach as it was first conceptualised (as a policy by the CBD), and the outcomes of this policy in domestic settings.

The field of policy implementation studies suggest three broad categories of theory that describe an *implementation deficit*, namely: top-down theories, bottom-up theories, and mixed theories. Top-down theories suggest that implementation is driven by policy-elites, through strict command-and-control hierarchies; and are enacted by compliant civil servants so long as notions of order, communication, and discipline are maintained (Derthick, 1972; Dunsire, 1978; Maziman and Sabatier, 1989). Bottom-up theory suggests that, in fact, it is those at the final interface between policies and the public (i.e. the civil servants) that transform policy to suit their situation, and therefore 'create policy' (Lipsky, 1979; Barratt and Fudge, 1981; Hjern and Hull, 1982). Mixed theory suggests that policy implementation is a situationally dependent combination of top-down and bottom-up (Matland, 1995; DeLeon and DeLeon, 2002), or is fundamentally driven by 'market forces' (Sabatier, 1986).

Chapter Two highlights how the ecosystem approach is a poorly defined and defended weak policy which tends to be delivered (to its intended audiences) by weak policy instruments. Furthermore, the implementation of ecosystem approaches tends to be poorly monitored and enforced at domestic scales. Based upon this inherently weak nature, and the literature which suggested that implementation of the ecosystem approach may be contingent upon *individuals* and *organisations*, street level bureaucracy (SLB) theory was selected as the theoretical frame for this thesis. Street level bureaucracy is an important theory from the bottom-up tradition of implementation studies (Hupe et al, 2015). Street level theory (SLT) suggests that the implementation of policy is ultimately contingent upon the final deliverers of that policy, in street level interactions with the public consumers of policy (Lipsky, 2010). Moreover, classical SLT suggests that due to dynamics of autonomy, discretion, and conditions of work, these final deliverers of policy make compromised decisions which

subtly alter the intended form of the policy (Lipsky, 2010). As the entire nature of public administration has changed to reflect new public management and governance (Rhodes, 1994), so too has SLT evolved to continue to illuminate the dynamics affecting implementation at the policy-practice interface (Ellis, 2011). Indeed, SLT is currently undergoing a renaissance of use and interpretation (Weichselgartner and Kasperson, 2010; Ellis, 2011), with scholars utilising it to explore the contemporary evolutions in public administration (Hupe et al, 2015). This thesis offers an original and innovative contribution to this discourse where it explores whether internationally-originated weak policy-notions exert influence on the final 'deliverers of policy' at the local street level. If weak internationally-originated *regimes* and policy-notions are similarly exerting only weak influences on policy implementers at street level then in what way are they affecting behavioural changes, if at all? In the contemporary evolving field of public administration where policy-notions are being delivered at national 'street levels' by a wider panoply of implementation actors' consideration for how to continue to affect and impact their behavioural change is a major concern for the designers of environmental regime. This thesis highlights the major forces affecting environmental policy-notion/regime implementation at the street level, and makes suggestions for how regime designers might seek to continue affecting change in contemporary settings.

The results of this thesis have significance and impact where they show how twenty years after its creation an ecosystem approach is being operationalised in practice within the UK. These results speak to both the UK government, and the subsidiary body on implementation (of the CBD), who continue to strive for incremental policy learning on how the ecosystem approach is being implemented.

1.5 Research aims and objectives

Given the above outlined context, this thesis conceptualised three central research aims:

1 To understand what members of an English UNESCO biosphere reserve understand an ecosystem approach to be.

2 To critically evaluate implementation of an ecosystem approach and the individual Malawi principles within this biosphere reserve.

3 To show how street level bureaucracy theory has analytical applicability for explaining the implementation of soft international policy codes through a case study of the ecosystem approach.

1.6 Thesis structure

Chapter Two explains in detail what the ecosystem approach is, its origins within the CBD, and how it has been understood through policy transposition globally, in European Union (EU) policy, in United Kingdom policy, and in England. It presents a narrative account of the ecosystem approach's *implementation deficit* and articulates how it has been interpreted in policy at each scale of environmental governance at the domestic English scale. Chapter Two then presents a substantive review of the literature of the barriers to implementation at local domestic scales. From this literature a four part typology of barriers to implementation is synthesised. The findings of the literature review highlight how the historic ecosystem approach literature has tended to explore institutional and governance-related barriers to implementation at the expense of human-centric explanations. Therefore, based upon this paucity of research literature, *individual* and *organisational* barriers to implementation were selected as the units of analysis for this research thesis. Chapter Two concludes by articulating the first ancillary question that structures this thesis: 'What is the ecosystem approach?'

Chapter Three describes the MAB programme and WNBR. It explains the origins and current format of the MAB programme, as well as how individual biosphere reserves are constituted. It describes MAB in the UK, the UK network of biosphere reserves (UKMAB), and constructs an argument for the exceptionalism of UKMAB within the wider MAB programme. This is followed by a brief consideration of the drawbacks and challenges that WNBR and individual biosphere reserves face, as well as highlighting

the explicit connections between the biosphere reserve concept and the ecosystem approach. Chapter Three then introduces the selected case study area for this research thesis, the North Devon UNESCO biosphere reserve (BR). The structure, location and governance of the selected case study area are explored, before Chapter Three concludes by posing the second ancillary question: 'Is an ecosystem approach being utilised within the case study area?'

Chapter Four suggests that Lipsky's SLB theory of bottom-up policy implementation may offer an original and significant framing for this research. This thesis specifically places itself within an emergent discourse surrounding SLT (exemplified in Hupe et al, 2015) which seeks to critically contest the operational boundaries of this theory for explaining dynamic contemporary public administration settings. Congruent with this discourse this chapter suggests that a wider spectrum of environmental actors should be considered as deliverers of policy at the 'street level', and that these individual's partially implement policy directives based upon professional bias, pressures, and mandates. This discursive framing is used to analyse implementation of an ecosystem approach within the case study biosphere reserve. Chapter Four concludes by posing the third ancillary question: 'Are street level dynamics influencing implementation of the ecosystem approach in the case study area?'

Chapter Five starts by outlining four 'key understandings', derived from the preceding chapters, that will structure the methodological decisions. Based upon these understandings, a mixed inductive-iterative case study approach is utilised (as per Bulmer, 1954). Congruent with Brodkin (2003) a mixed method approach of semi-structured interviews, elite interviews, documentary analysis, and observations of biosphere partnership meetings was selected for the methodology. The sample population was categorised around an insider/outsider framework, and a purposive sampling frame was used to identify potential participants. In all of the data approaches collection ethical issues were considered.

Chapter Six discusses the results of ancillary question One - 'what is an ecosystem approach understood to be?' Gauging understanding about the ecosystem approach was an important first step in establishing how it was being utilised within the case

study area. Based upon participant perspectives on the concept of an ecosystem approach, original insights that move forward understandings about the nature of *ecosystem science* were established.

Chapter Seven then addresses ancillary question two – 'is an ecosystem approach being utilised within the case study area'? To address this question, Chapter Seven utilises a thematic analysis of the interview and documentary data to evaluate the degree to which each of the Malawi principles were being operationalised within the case study area. Common to the thematic analytical method (Tjandra et al, 2013) Chapter Seven begins by analysing the data against a series of pre-conceived categories. These categories include: 1) the four common themes clustering the Malawi principles in groups of 'ecological' principles, 'social' principles, 'economic' principles, and 'scalar' principles (as per Korn et al, 2002); as well as 2) each of the Malawi principles individually. These thematic findings were used to construct a composite characterisation of the unique form of ecosystem approach being implemented within the case study area.

Chapter Eight presents three cross-cutting, emergent, street level themes that were substantively affecting how *individuals* and *organisations* were implementing an ecosystem approach. Chapter Eight discusses the differential between what canonical street level bureaucracy might expect to be found and what was found. It critically considers the utility of SLT for explorations of weak policy-notions.

A synthesis of the overall results of this thesis are presented, and then concluded in Chapter Nine. The main findings are rearticulated, in relation to how they meet the research aims and ancillary questions. A series of critiques, critical reflections, and a broad agenda for further research is presented.

Chapter Two: The Ecosystem Approach

‘The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way, and which recognises that people with their cultural and varied social needs, are an integral part of ecosystems’ (Maltby, 2000)

Chapter Two initially presents the policy-notions of ecosystem services, the ecosystem approach, and ecosystem science. It then discusses the position of an ecosystem approach in global environmental governance, and the international scale efforts at the approach’s domestic implementation. This leads to discussions of implementation in European, UK, and English policy settings. The literature of domestic implementation of the approach is synthesised leading to the understanding of the importance of human barriers to implementation (individuals and organisations). Finally, an initial research question is articulated.

2.1 Integrated natural resource management

This thesis is broadly concerned with how integrated natural resource management approaches have been implemented in England. Indeed, many different forms of integrated natural resource management have been proposed and operationalised in response to the global biodiversity crisis (Frost, 2006; Stucki and Smith, 2011). The two more prominent approaches to integrated management practices seen in England are explored in Section 2.1 in the interests of highlighting the diversity and convergence of opinions on how to approach integrated natural resource management.

2.1.1 Ecosystem services, the ecosystem services framework, and natural capital approaches.

One approach to integrated natural resource management that enjoys particular contemporary currency with international and national policy makers are the notions of ecosystem services and natural capital. According to the UK National ecosystem assessment (NEA) (2010) ecosystem services are 'the benefits provided by ecosystems that contribute to making human life both possible and worth living'. The NEA (2006-2009) was the first analysis of the UK's natural environment conceptualised in terms of the benefits the natural environment provided to UK society and economic prosperity. It was an inclusive process involving many government, academic, NGO and private sector institutions; and supported a degree of institutionalisation of 'ecosystem services' by UK policy-makers and in policy. The services derived from ecosystems can be situated within a wider conceptual framework that describes the functioning of natural processes leading to anthropocentric 'services'. This is called the ecosystem services framework (ESF) which Sekercioglu (2010) describes as a collection of inter-related and interdependent concepts that describe the vast network of integrated ecosystems that makes up the natural world. Arguably, the concept of an ESF was first promoted by the environmental economics epistemic community (e.g. Daly, 2004) to international/national policy-makers. This was done in the interests of reframing the eco-centric rationale for conservation (DeFries et al, 2004; Dunlop, 2014) towards an anthropocentric rationale (Fisher et al, 2008; Gómez-Baggethun et al, 2009)[2]. Moreover, this reframing was to account for the perceived failures of traditional conservation practices (Gómez -Baggethun et al, 2009). The ESF has come to gain significant traction with national policy-makers through its exposure and use in significant multilateral projects of global environmental governance (e.g. the MA, TEEB, NEA), and endorsement by many multilateral environmental agreements (MEA)[3] and *regimes,* (including the CBD). Moreover, the ESF (and especially

[2] Ecocentrism, anthropocentrism and biocentrism, are moral positions from the field of environmental ethics which describe different understandings about human relation to nature. Ecocentrism suggests that human civilisation is part of a wider natural architecture and that much of the natural world has intrinsic rights to exist irrespective of human or social endorsement. Into this anthropocentrism argues that the natural world only has value insomuch as it can be defined by human wants, desires and utility. The disagreement between these two positions remains fundamental (and ultimately unresolvable) to environmental ethics and the ongoing discourses about sustainable development, natural resource management and ethics.

[3] Multilateral Environmental Agreements are agreements between a large group of states to act in a certain way towards an environmental issue. There can be agreements between two states – bilateral agreements, or between a few, but many states – a plurilateral agreement. There are currently over

ecosystem services) is an idea which has played a fundamental enabling role for the natural capital approach. Apitz (2013) suggests that the ESF is a policy-notion which is becoming increasingly dominant and paradigmatic in government policy and practice. Research now suggests that following its inclusion in the MA, TEEB, and the NEA, the ESF is starting to become mainstreamed in UK domestic policy outputs (Turner and Daily, 2008; Simpson, 2011; Defra, 2013); though other research suggests that there may be a marked difference between the EFS's impact upon UK policy outputs and policy outcomes (Russel et al, 2014). Certainly, UK policy documents suggest that the ESF has had significant traction in post-2005 UK biodiversity policy outputs (Defra, 2007; 2011; 2015).

Natural Capital is a term often juxtaposed with the ESF and ecosystem approach. Natural capital is an approach, or series of approaches, which utilise the logic, tools and methods of economics to account for the global:

> 'stocks of natural assets which include geology, soil, air, water and all living things. It is from this Natural Capital that humans derive a wide range of services, often called ecosystem services*'* (World Forum on natural capital, 2015).

These natural capital approaches offer policy-makers the ability to quantify the value (in monetary terms or otherwise) of natural stocks and flows that are delivered to society (i.e. 'final' ecosystem services). These values can then be used to render the ecosystem service (stocks and flows of services) amenable to inclusion in cost benefit analyses (Barbier et al, 1990; Turner and Daily, 2008) and public accounting (Office for National Statistics, 2017). In turn, this makes the natural stocks and flows amenable to inclusion in governmental and private sector (JNCC, 2015) decision-making. Natural capital approaches have been adopted by many MEA, including the CBD through the 'Natural capital declaration' (UNEP, 2012), and in CBD COP decisions (Decision XII/10/3F). Driven by its own champions in the UK epistemic

280 Multilateral environmental agreements in place today (World Trade Organisation, 2015), which can be said to have had their genesis at the United Nations Conference on the Human Environment in Stockholm 1972 (MEA negotiators handbook, 2007). Other MEA take account of the ecosystem approach, such as the Convention on the International Trade in Endangered Species (Article IV/3), and the RAMSAR convention (Decision IV/10).

community (e.g. the UK Natural Capital Committee), natural capital approaches are set to form the centre-piece for the UK government's (through Defra) new '25-year strategy for nature'. It is envisaged that this imminent policy-paper will promote natural capital approaches as the structure and framing for Defra strategic decision-making over the next 25 years (Defra, 2016). Moreover, through a series of 'pathfinder' exercises (2016-2018) it will be shown how natural capital approaches can offer utility and value to local-scale users of it.

2.1.2 The ecosystem approach

Similarly to ecosystem services and natural capital another approach to integrated natural resource management is called the ecosystem approach. Ecological systems are complex, inter-related, and inter-dependent. The functioning of these complex systems occur through time, across space and land, and are variably 'understood' by different perspectives and intellectual traditions (Reid, et al, 2006:1). The processes and relationships that comprise the functioning of ecosystems are often highly complex, convoluted, and non-linear. Though there has been a great deal of research in recent decades modelling complex ecosystems for management purposes (Loreau, 1997; Loreau et al, 2001; Mooney et al, 2009; Laurence et al, 2011), their non-linearity and complexity continues to make such research difficult (Evans, 2012). This complexity means that designing systems and approaches to account for the management of ecosystems is also difficult (Journal of Ecological Modelling, 2002). The task of designing management strategies is further complicated when intrinsically connected social, economic, and scalar dimensions are also considered in the design of management approaches. Indeed, Österblom et al (2010) have highlighted how the socially-constructed modes, forms, and processes created for the governance of ecosystems are often mis-matched with the ecosystem they are meant to governing.

The ecosystem approach is a strategy (or framework) for guiding integrated natural resource management practice that was distilled out many decades environmental management best practice. Knowledge and understanding of these best practices were collated at a specially convened workshop[4] (under the aegis of the CBD) in

[4] This workshop was at Lilongue, Malawi on January 1998 and from it the 'Malawi Principles' were named.

consultation with the international environmental management policy community. The creation of this ecosystem approach was heavily influenced by the practice of 'ecosystem management' (Grumbine, 1994), and later 'ecosystem based management' (McLeod et al, 2005). As Stadler suggests (2002:25), these had grown out of the experiences of bottom-up environmental management practitioners in North America and Europe in the later twentieth century and played important role in the creation of the ecosystem approach. So too did the outputs of the Sibthorp Seminar Series[5] (1996) (Sibthorp Trust online), which first created a set of experimental principles to articulate ecosystem approach thinking and practice.

2.1.3 The Malawi principles and points of guidance

Taking an ecosystem approach to management is described through a series of twelve principles, the Malawi Principles, which are described in Table 2.1 (below). As Table 2.1 shows, the Malawi principles are conceptual in nature, making their operational value to integrated natural resource management challenges difficult to understand (Fish and Saritisi, 2015), and in need of translation. To account for this difficulty, Table 2.1 also includes an explanation of each principle from the CBD's perspective.

[5] The Sibthorp Seminar series is an output of the Sibthorp Trust which seeks to 'promote the study and discussion of key environmental issues through the commissioning of workshops, seminars or study groups and to publish the results of such activities as the 'Sibthorp Papers'. There have been four Sibthorp seminar's, and the first of these played a significant role in the creation of the CBD Malawi principles.

Table 2.1 The Malawi principles of an ecosystem approach

Principle	CBD explanation
One. Recognise objectives as society's choice	Economic, cultural and social perception of ecosystems varies amongst different elements of human society. Human rights, interests and cultural diversity must be considered and ecosystems should be equitably managed for their intrinsic, tangible and intangible benefits.
Two. Aim for decentralised management	Management should involve all stakeholders, balance local interests and wider public interests, ensure management is close to the ecosystem, and encourage ownership and accountability.
Three. Consider the extended impacts, or externalities	Managers should consider and analyse effects (actual or potential) that activities have on other ecosystems.
Four. Understand the economic context and aim to reduce market distortion	Market distortions that adversely affect biodiversity must be avoided. Incentives should support conservation and sustainable use and costs and benefits ought to be internalised within the focal ecosystem.

Five. Prioritise ecosystem services	Ecosystem functions and structures that supply services must be conserved.
Six. Recognise and respect ecosystem limits	Management strategies must consider environmental conditions that limit productivity, ecosystem structure, functioning and diversity.
Seven. Operate at an appropriate scale, spatially and temporally	Operational boundaries are defined by users, managers, scientists and local peoples. Cross-boundary connectivity should be promoted where necessary. Management options must consider the interaction and integration of genes, species and ecosystems.
Eight. Manage for the long term considering lagged effects	Characteristic temporal scales and lag-effects within ecosystems must be taken into consideration. Preference of favouring immediate benefits over future ones should be avoided.
Nine. Accept change as inherent and inevitable	Adaptive management must recognise the dynamic and complex nature of ecosystem properties and anticipate change. Managers need to avoid decisions that limit future options and actions should consider long-term protracted global change.
Ten. Balance use and preservation	It is important to adopt a flexible management approach that takes conservation and use into context and apply a continuum of measures from fully protected to sustainably managed ecosystems.

Eleven. Bring all knowledge to bear	Relevant information should be shared with all stakeholders. All assumptions should be made explicit and checked against available knowledge and stakeholder views.
Twelve. Involve all relevant stakeholders	To address management complexities decision-making should draw upon necessary expertise and involve relevant stakeholders at all levels.

Source: CBD, 2000

After the launch of these principles (2000) the CBD suggested five further points of additional guidance as adjunct to the original Malawi Principles to support operationalisation of the approach, see Table 2.2.

Table 2.2 The points of operational guidance

	Point of guidance
1	Focus on the functional relationships and processes within ecosystems
2	Enhance benefit sharing
3	Use adaptive management practices
4	Carry out management actions at the scale appropriate for the issue being addressed, with decentralisation to lowest level, as appropriate
5	Ensure inter-sectoral cooperation

Source: Smith and Maltby, 2003

2.2 *Ecosystem science*

2.2.1 Introducing *ecosystem science*

There are many similarities between the idea of an ecosystem approach and the idea of ecosystem services (Fish, 2012). They are both frameworks for structuring integrated management practices that simplify (or structure) complex systems to make them amenable to management practices. They are ideas that are also inextricably connected, and as Table 2.1, consideration of ecosystem services is the fifth Malawi principle. Moreover, both are interdisciplinary frameworks that have been promoted through policy and used in natural resource management practice in the UK and around the world. However, the key differentiation between these two terms is where the ecosystem approach is a framework of clearly articulated (if not clearly understood) principles for directing natural resource management practice; and the ESF is a framework for describing the functioning of the natural world, as it might deliver value to people and communities.

Some scholars (e.g. Scott et al, 2014:19-22) suggest that consideration of ecosystem services should be seen as a key enabler for taking an ecosystem approach. Indeed, both Scott et al (2014) and Fish (2012) suggest that they are mutually reinforcing concepts (e.g. Malawi principle 5) with the ESF acting as an important artefact for operationalising the ecosystem approach. That said, others suggest that these two concepts are different ideas, and confusing them is detrimental to their individual utility (Lawton and Rudd, 2014; DeLucia, 2015).

The relative confusion between the terms and terminology within the canon of 'ecosystem' literature, is a subject of significant contemporary discourse (Laffoley et al, 2004; Scott et al, 2014; Waylen et al, 2014[A]; DeLucia, 2015). The confused and contradictory use of 'ecosystem' terms and terminology is a point raised in both the historic (Smith and Maltby, 2003; Shepard, 2004; 2008) and contemporary research (Scott et al, 2014; Waylen et al, 2014[A]; Fish and Saritisi, 2015; Raum, 2017). This confusion and contradictory use of language and terminology occurs when users of an ecosystem approach (or policy-makers and transposers) confuse its name and precepts with other similar sounding 'ecosystem' concepts. Then, because the concept of an ecosystem approach is poorly enforced and mandated for use, confusion sets in, and comprehension tends to diminish. Despite the work of some public agencies to promote understanding of 'an ecosystem approach' (e.g. Porter et al, 2014; Pepper, 2016), the concept's constant reinterpretation at different governance scales; coupled to a field of other similar sounding terms means that the concept of 'an ecosystem approach' may be being confused with other similar sounding ideas and policy-notions. There is precedent for this where other weakly conceptualised and enforced integrated management policy-notions have suffered similar 'fates' such as sustainability (see Helm, 2000). That said, the particular state of confusion and miscomprehension of the ecosystem approach with other terms has been contemporaneously discussed in a UK context by scholars (Waylen et al, 2014[A]; Scott et al, 2014; DeLucia, 2015). Scott et al (2014) gave this confused and contradictory state its own the heuristic term of *ecosystem science*. In the NEAFO Scott and colleagues (2014:11) found there was:

> 'Uncritical use of the terminology and vocabulary associated with ecosystem

> science which we found unhelpful: terms such as Ecosystem Services, Ecosystem Approach, Ecosystem Services Framework, Ecosystem Services Approach and related terms are often used interchangeably and/or without a clear understanding of their meaning, scope and interrelationships'.

Scott et al's *ecosystem science* (2014) suggests an uncritical use of 'ecosystem-sounding' terminology (e.g. a cause), which, in turn, leads to (the effect) of:

> 'Hindered efforts to communicate its efficacy and value to decision-makers, both as a new paradigm for integrated land and water management, and its additionality for professional practice'.

In the above quote Scott et al (2014) was suggesting that the confusion was unhelpful in promoting implementation of ecosystem approach itself. However, this was a particular position that was found to not be universally held (e.g. Fish, 2012). Indeed, there appeared to be differing opinions on whether confusion between terminology was either broadly helpful or unhelpful. This appeared to be a debate over different positions on whether the 'ends' (integrated management in practice) or the 'means' (the language and terminology of policy-notions used to affect change) were important. Indeed, this appeared to be a debate over the 'ends versus means' to integrated natural resource management. For example, both Fish (2012) and Scott et al (2014) have suggested that ultimately all that matters is achieving the desired 'end' of integrated management, and the terminology and language used to achieve this are broadly immaterial. From an implementation and impact perspective, the ultimate 'metric of success' is whether a particular notion or concept affected real tangible change. If the ESF (for example) could be proven to be more successful at affecting real and tangible change in practitioners towards integrated management, then surely this must be seen as a 'success'; no matter any confusion about language or terminology. As alluded to by Fish (2012) pedantry about terminology might just be a distraction in such cases, when what really matters is effectiveness and tangible impacts. Arguing tangentially to this, Scott et al (2014) suggested that this might only be true to a point. Eventually the confusion about terminology within any contested space (such as *ecosystem science*) will eventually reach a point of it being impossible

to differentiate the impact of any one of the terms or policy-notions from the others. This makes evaluating impact and attempting policy learning increasingly difficult. Indeed, Lawton and Rudd (2014) and DeLucia (2015) considered that the 'means' of implementing forms of integrated natural resource management were actually important to what was it was that was being achieved. This argument that language and terminology matter in affecting how natural resource policy notions are implemented in practice is a point well made by Helm (2000) when discussing the utilisation of sustainability as a policy-notion. Whilst clearly this notion of contested and confused language appeared to be important it must be noted that different scholars appeared to hold different positions at different times; as both Scott et al (2014) and Fish and Saritisi (2015) have explored the other side of the arguments.

Scott et al (2014) went further in suggesting something about the nature of *ecosystem science* where they suggested that within it the notions of ecosystem services and natural capital were currently dominant and ascendant. This meant these ideas and policy-notions are discussed more frequently in policy-documents and appear to currently enjoy greater 'favour' or 'patronage' from national-scale policy-makers. What remained unknown was how this dominance of the ideas of ecosystem services and natural capital might be affecting the policy-notions of an ecosystem approach. Indeed, although speculated about by Scott et al (2014) the exact nature of relationship between these policy-notions within *ecosystem science* remained unknown. Certainly, it might be considered that *ecosystem science* was a proxy battle for the ongoing contention between anthropocentric and ecocentric management rationale (McCauley, 2006) or macro *public philosophies* (as per Schmidt, 2008). Critically however, it was considered that the notion of *ecosystem science* appeared to be an important dynamic affecting how these different frameworks for integrated management were being understood by their intended users, and then interpreted, and operationalised in practice. Thus, it needed to be considered when undertaking a study on policy implementation. This thesis specifically focused on understanding how the ecosystem approach from the CBD was being implemented, and this is discussed next in Section 2.2.2.

2.2.2 Studying an ecosystem approach

From these two different approaches to integrated natural resource management this thesis decided to focus on how the ecosystem approach was being implemented. Congruent with Waylen et al (2014[A]) it was considered that the ecosystem approach represents one of the most ambitious and long-term approaches to integrated natural resource management. Coupled to this, other research suggests that it has become one of the most challenging approaches to implement and evaluate. This made it an excellent topic for investigation by this thesis. This approach's value comes from where it advances an enhanced and detailed framework for natural resource management practice that includes people and economics along with traditional ecological considerations. Moreover, it focuses attention on the intrinsic connections between people, economics and ecology into a *systems*-based framework that moves beyond traditional silos of knowledge and expertise (Kay et al, 1999; Farmer et al, 2012). *Systems* thinking suggests how understanding of complex systems can be enhanced through focusing on linkages and connections between the components that comprise the system. *Systems* thinking suggests that complex phenomena (including ecosystems) are best described and understood through a multi-perspective consideration all of the holistic elements that comprise it. True to the adage that 'the whole is more than the sum of its parts'; *systems* theory suggests that complex holistic systems often display emergent properties when complex entanglements of the different elements occur. Although the ecosystem approach is one of many different approaches to integrated management practice Kay et al (1999) suggest that it is the only one to do so in an explicitly *systems* manner.

The value of the Malawi principles as a framework for general integrated management practice is testified by the many other fields (beyond natural resource management) that 'an ecosystem approach' has now been exported and applied to[6]. The ecosystem approach is also perhaps one of the only frameworks for integrated natural resource

[6] Whilst taking an ecosystem approach is predominately associated with integrated natural resource management, 'ecosystem approach's' are contemporarily being utilised to articulate frameworks for other multi-disciplinary 'environmental' contexts, including climate change mitigation and adaptation, poverty alleviation, disaster risk reduction and others (UNEP online, 2009). Furthermore, some scholars have explored ecosystem approach applications in other non-environmental fields such as education (Charland, 2011), healthcare (Forget and Lebel, 2001; Waltner-Towes et al, 2003; Lebel, 2003; Dakubo, 2004) and even in cultural research for explaining religious diversity (Sloan-Wilson et al, 2017).

management that has been endorsed by a panoply of other international MEA (Currie, 2008:3). Indeed, the ecosystem approach is a product of the CBD, and was first conceptualised in the common form seen in Table 2.1 by the CBD and institutions of global environmental governanc. Thus, Section 2.2 moves on to exploring the context of the ecosystem approach's creation in global environmental governance.

2.3 Locating the ecosystem approach in global environmental governance

2.3.1 Establishing the international context: Multilateral environmental agreements and *regimes*

A profusion of MEA have flourished in the wake of the Man and Biosphere conference (1968), and the United Nations conference on the human environment (1972) (as per Mitchell, 2002-2016). These conferences highlighted the need for co-operative international efforts to manage collective action environmental problems, including global biodiversity loss (Goeteyn and Maes, 2011). These collectivised efforts have often taken the form of MEA between states. The purpose of MEA is to bind states together to common forms and processes which will, in turn, stimulate common, collectivised, domestic policy and behavioural changes to protect the natural environment (Hønneland and Jørgensen, 2003). Compliance with the terms and forms of a MEA is founded (in international law) upon the principle that commitments made by states should be observed and honoured by them (*pacta sunt servanda*) (Wehberg, 1959). Though, in reality, this idealistic principle means that full implementation of a MEA is rarely achieved (see Young, 2011). States have different sovereign interests and priorities and correspondingly different domestic policies and processes. This means that there are often disconnects between state commitments to MEA and compliance with the terms of the MEA (Young, 1989). In addition to MEA, international environmental *regimes* are another form of internationally agreed commitment towards common action. As Schiele points out (2014: 24-28), *regimes* play a pivotal role in supporting multilateralist global environmental governance and MEA. *Regimes* are not legally binding commitments to action, and instead, as Krasner (1982) describes they are:

> ‘Implicit or explicit principles, norms, rules and decision-making procedures around which actors’ expectations converge in a given area of international relations.

In this way *regimes* are sets and codes of norms of behaviour (Schiele, 2014) that are supported and buttressed by institutions (Young, 1989:31); but as Jackson and Burhs (2015) suggest, play an important role in articulating aspects of MEA. Considering that the body of content describing the ecosystem approach includes recommendations, processes, and expectations of use, the ecosystem approach can be described as an environmental *regime*. Now that the two structures of global environmental governance in relation to this thesis have been established (MEA and *regimes*), Section 2.3.2 moves onto describing the detailed origins of the ecosystem approach *regime* in the CBD.

2.3.2 Genesis of the Convention on Biological Diversity (CBD)

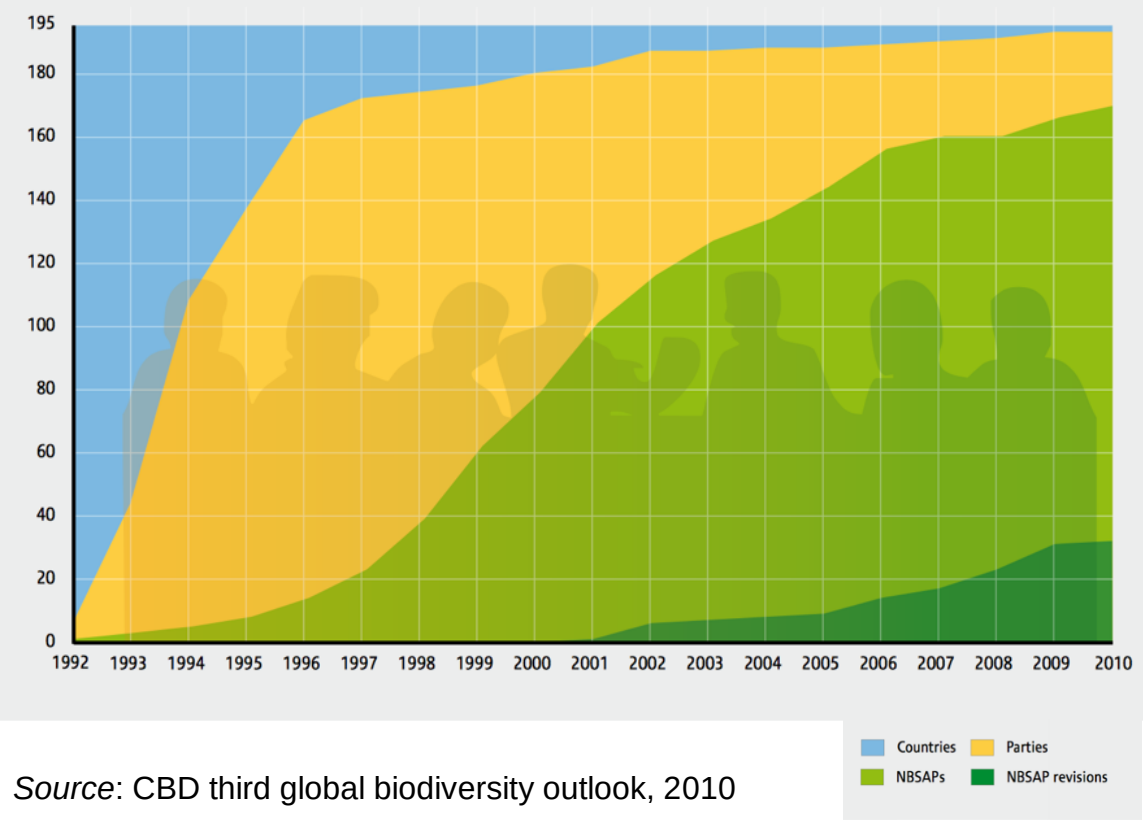
In the build-up to the seminal Rio Earth Summit (1992),[7] various international biodiversity ‘experts’ and policy elites lobbied for the creation of an MEA that would specifically address concerns of increasing biodiversity loss (as per Figure 1.1). In response to this lobbying, the United Nations environment programme (UNEP) constructed the CBD. By the time the CBD entered force it had attracted 168 signatories; which has since increased to 193 signatories (of the 196 states in the world as of 2017). The states which have signed the CBD are said to be ‘parties to the convention’[8]. As Figure 2.1 (below) highlights, the significant majority of global states are now party to the CBD, and slightly fewer have developed National Biodiversity

[7] Mee (2005) and Raustiala (1997) suggest that both UNEP resolution 14/25 (1987), and the intense lobbying of the IUCN, played a seminal role in the lead up to Rio, and the creation of the CBD.

[8] Parties to the Convention are states who signed the treaty when it originally opened for signatures and then subsequently ratified this in their respective national parliaments; and states who did not sign it originally but have since *acceded* to the treaty (accession). Similarly, newly formed states that were not in existence when it was originally open to signatures can be said to have *succeeded* to the treaty. The only major global states to have not ratified the CBD are the Holy See and the United States of America. In Figure 2.1 the ‘countries’ are all the recognised states of the world (in blue), ‘parties’ represents the number of global states who have consented to be bound by the CBD (i.e. agreed to sign the agreement) (in yellow), the ‘NBSAP’ in green represents those states which have since created a national biodiversity strategic action plan, and those which have revised this action plan for their country (dark green).

Strategic Action Plan's (solely, and with support from other countries, including the UK). Creation and implementation of these National Action Plans were one of the primary strategic aims of the CBD (IUCN, online); and so, as Woodley et al (2012) argue, in this regard at least the CBD can be claimed to have been a 'successful' MEA.

Figure 2.1 Parties to the Convention on Biological Diversity



Source: CBD third global biodiversity outlook, 2010

The CBD and its small secretariat (based in Montreal, Canada) is financially supported by national contributions from signatory states. The signatory states to the CBD meet every two years to review biodiversity issues and programmes, as well as to issue binding decisions, recommendations, and exhortations (see Annex A). This meeting, or conference of the parties to the convention (COP) discusses and then agrees the substantive decisions of the CBD. Johnston (1997) goes so far as to suggest that the COP represents the 'supreme authority' of the CBD, around which other ad-hoc groups and institutions congregate (LaPestre, 2002). Mee (2005) highlights how the meetings of the COP are major events which endow significant kudos for the host countries. Signatory states are represented at COP by select representatives of their legislative branch alongside members of their national executive (Johnston, 1997).

Although the CBD was negotiated under the auspices of UNEP, the CBD is only subject to limited UNEP oversight. Indeed, as Stokke and Thommessen (2013:23) suggest, the relationship between UNEP and the CBD has been 'characterised by turf battles and eroding responsibility' caused by early 'personality conflicts between the CBD secretariat and UNEP high command'. Although some suggest that this antagonism between the institutions of UNEP and the CBD has subsided over time (Raustiala, 1997), Depledge (2005) suggests that there are still ongoing and residual tensions between them. Mee characterises the contemporary relationship as 'the CBD (continuing) to act as a separate intergovernmental organisation, serviced by the UNEP' (2005:246). That said, the CBD shares positive and reinforcing (but in places complicated) relationships with other institutions of global environmental governance and MEA (see Kimball, 1997).

The actions of the CBD are directed by three articles or objectives, which are:

- Article One: The conservation of biological diversity
- Article Two: The sustainable use of its components
- Article Three: The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and the transfer of relevant technologies.

All signatories to the CBD 'consent to be bound' by its recommendations and requests (United Nations Treaty Handbook, 2012). The UK was an early signatory to the CBD (ratified in the Parliament in June 1994) and as a ratified signatory the UK has a responsibility to implement the COP's decisions and respond to its requests. This includes implementing *regime* of the CBD in national legislature and policy. Moreover, the UK was the first state to produce a National biodiversity Strategic Action Plan (JNCC, online) under direction from the CBD. In a similar vein to all other signatories to the CBD, the UK reports its progress of meeting and fulfilling requests from the CBD in 'periodic national reports' which are compiled every two years (Article 26). Ganguly (2015) suggests that these periodic national reports are important to the CBD, as for many years they represented their only tool for assessing implementation of the convention's decisions, recommendations, and *regime*. This thesis is particularly

concerned with the *implementation* of the ecosystem approach *regime*, and so Section 2.4 now goes on to explore 'implementation' in the context of the CBD itself.

2.4 The International CBD-scale ecosystem approach

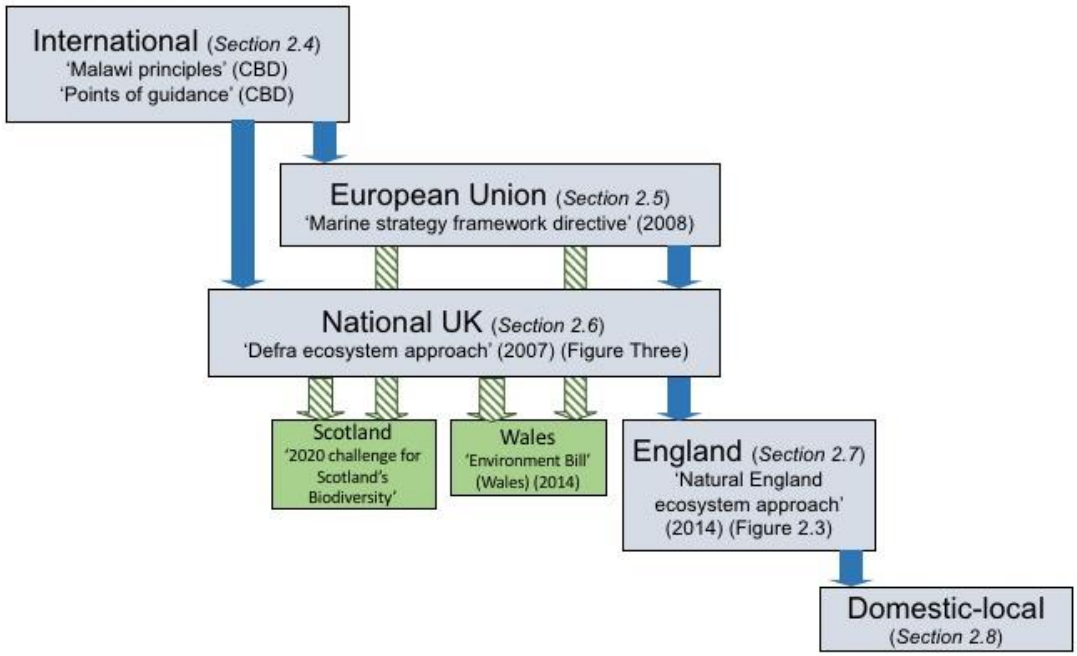
2.4.1 Introduction to the 'international ecosystem approach'

Rosendal (2013) has suggested that twenty years after the launch of the ecosystem approach it might be expected that that it has been implemented across all scales of domestic environmental governance to which it is relevant. Though the regime effectiveness literature might be a little more circumspect that Rosendal's comment (e.g. Young, 1989). Indeed, the research literature suggests that the ecosystem approach has been consistently under-implemented by all signatory members of the CBD, and at all scales of governance (Shepard, 2004; 2008). These suggestions about the ecosystem approach's broadly weak implementation by signatories to the CBD is based upon a number of large comparative studies conceived at the behest of the CBD and undertaken by the International Union for the Conservation of Nature (IUCN) (Shepard, 2004; 2008) and others (Smith and Maltby, 2003). Though there have now been no large international comparative studies of this commissioned since Gill Shepard's last contribution (2008). Although there are clearly national and sub-national site-by-site variations in interpretation and use of an ecosystem approach, the UK is also said to have suffered from an *implementation deficit* (Scott et al, 2014; Fish and Saritisi, 2015), this is explored further in Section 2.8.

Implementation of the ecosystem approach necessarily touches upon all scales of environmental governance (Herkenrath, 2002). It's state of poor implementation is explored throughout the remainder of Chapter Two (and implicitly throughout the thesis) through its inherently multi-level nature. That is the *implementation deficit* is explored from an International, European, National and local scale of natural resource governance (see Figure 2.2). This multi-level construct (as per Figure 2.2) is used to structure the remainder of Chapter Two due to the inherently multi-level, hierarchical, and sequential nature of the ecosystem approach as a cascading policy-imperative. Additionally, this multi-level narrative is utilised due to the logically sequential and abridging nature of the levels of ecosystem approach governance scales. Critically,

each scale in Figure 2.2 is not a discreetly bounded layer of governance (as per Bulkeley and Betsill, 2005); and much like other multi-level constructs, each scale of governance in Figure 2.2 represents porous layers that allow flows of knowledge, power, and influence between them (e.g. Badie et al, 2011). Every level of governance, from the CBD to local-domestic scales, continue to play roles in transforming the CBD ecosystem approach into new iterations of it. That all said, this thesis does not adopt and utilise an overtly multi-level construct to frame the entirety of the study, it merely uses it to structure the remainder of Chapter Two and notes the inherently multi-level nature of the subject by way of background context.

Figure 2.2. The ecosystem approach multi-level 'implementation chain'



Source: created by author

Figure 2.2 illustrates how each of these scales of governance has been a setting for novel re-interpretations of the ecosystem approach reflective of the interests, drivers, and pressures of the implementing institution or agency. In Figure 2.2, the blue boxes refer to governance settings in which the ecosystem approach policy-notion is reinterpreted for operation. Each blue box correlates to a particular scale of multi-level natural resource governance. The arrows refer to the cascading delivery of the ecosystem approach policy-notion from one level of governance to the next. The green arrows and boxes refer to the delivery and reinterpretation of the ecosystem approach

in the devolved nations of the UK and are not addressed in any significant detail in this thesis (see Kirsop-Taylor, 2018[A]). Figure 2.2 is an important conceptual artefact describing the multi-level nature of the ecosystem approach policy 'implementation chain' and is referred to at many junctures throughout this thesis. Analysis of the different multi-level aspects of Figure 2.2 begins with Section 2.4.2, which explores the 'international-scale', where the ecosystem approach originated.

2.4.2 The 'international CBD-scale' of promoting an ecosystem approach

Before the multilevel exploration starts with the international-scale, it is important to note the different forms of compliance regimes that international policy makers utilise for MEA, and *regime* implementation. *Regime* implementation can be monitored (and enforced) through either hard legalistic measures (or *type one* compliance regimes), or soft collegiate measures (or *type two* compliance regimes). Much like the majority of other *regimes* of global environmental governance (Carter, 2007), compliance with, and monitoring of, the ecosystem approach is mandated through collegiate *type two* measures. An explanation of the differences between *type one* and *type two* compliance regimes; an explanation of the *type two* mechanisms that support implementation of the ecosystem approach; and detailed descriptions of international multilateral bodies and institutions which support implementation can be found at Annex A. For brevity, the principle bodies and institutions that support the implementation of decisions and regime of the CBD are:

- The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)
- The Clearing House Mechanism (CHM)
- A subsidiary body for implementation (SBI)

Following this, Section 2.4.3 critically describes the CBD's efforts in promoting the ecosystem approach *regime* to its signatory members.

2.4.3 The CBD's ecosystem approach: A history of failure

The first COP of the CBD suggested that its decisions and objectives should be operationalised through an ecosystem approach (Decision II/8). At COP Four (1998)

parties complained that this approach was not consistently understood for operationalisation (Decision IV/1-B). Thus, the SBSTTA was mobilised to develop principles (and other guidance) on the ecosystem approach whilst taking account of the specialist workshop that had been held in Malawi (1998) on this subject. COP Four displayed the first concerns by members about the overall implementation of the CBD itself (as seen in Decision IV/10), which, in response urged signatory members to adopt measures to promote greater implementation. These measures included the use of domestic policy instruments such as incentives, public awareness raising, and inclusion in 'environmental impact assessments.

The subject of 'implementation of the ecosystem approach' was raised at various CBD meetings between COP Four and Five. At COP Five (2000) the CBD endorsed the newly named Malawi principles (Decision V/6) (see Table 2.1) and called upon members to put them into action (Decision V/6-2). COP Five asked signatory members to identify case studies highlighting implementation (Decision V/6-3). This COP also asked the SBSTTA to review the Malawi principles prior to COP seven (Decision V/6-5). It further called upon members to include the ecosystem approach when developing and reviewing national biodiversity strategies and national biodiversity action plans (Decision V/6-12). Moreover, the concern about operationalising the Malawi principles led to the creation of five additional points of operational guidance (see Table 2.2), which were built upon the 'Ecosystem Approach: from Principle to Practice' report (Maltby, 2000). By COP Five it was also becoming clear (to both the COP and CBD) that implementation of the ecosystem approach was not occurring at the envisaged pace. Therefore, the COP required more data about the causes of this poor implementation. This led to the COP requesting that a series of three 'pathfinder' workshops be organised to catalogue 'practical expressions of the approach in various contexts to be developed' (Smith and Maltby, 2003). The lessons learnt from these pathfinder workshops should then have been used by the CBD secretariat to 'prepare guidelines on implementation of the approach', ahead of COP Seven (Decision V/6)[9]. Maltby (2000) has suggested that:

[9] Waylen et al, (2014[A]) suggest that at this point the COP started to shift focus away from asking for clarification of the Malawi Principles and on to other concepts that may be better communicated and understood.

> ‘these workshops represented the first comprehensive, independent external review of the effectiveness and domestic implementation of the ecosystem approach’.

COP Seven (2003) saw the concerns about the ecosystem approach’s poor implementation continue, influenced in part by the results and lessons of the Pathfinder workshops (see Smith and Maltby, 2003). These concerns led to new decisions about the ecosystem approach (e.g Decision VII/2), and COP Seven noted that although:

> ‘there has been significant experience in implementing the ecosystem approach by some Parties operating under the Convention, as well as experience in implementation of similar approaches to management under other national, regional and international processes, but that additional efforts are needed to ensure effective implementation of the approach by all Parties and other Governments.’

To attempt to remedy this poor implementation, the COP requested the creation of the ‘ecosystem approach sourcebook’. This sourcebook would be based upon the results of the Pathfinder workshops (including three case studies in international biosphere reserves), with new case studies to be added by members of the COP (JNCC, 2005:1-2). The COP stressed the importance of its members collecting case studies highlighting implementation for the new sourcebook (The Ecosystem Approach – CBD guidelines). However, as Waylen et al have suggested (2014[A]:1219) ensuring that all members of the COP engaged with this case study collection process was challenging, where members continued to struggle with the concept and operationalisation of ecosystem approaches. Instead, as Waylen et al (2014)[A] again note ‘many of their examples were post hoc applications of the term to pre-existing initiatives and ideas’.

Despite some wider ‘successes’ for the ecosystem approach *regime*[10], by COP Seven concerns were being raised by members that domestic audiences still did not

[10] Indeed, despite poor implementation of the ecosystem approach, COP Seven did see an endorsement of the Addis Abada principles for guidance on the sustainable use of biodiversity. These

understand the approach. It was considered by the CBD that this miscomprehension meant the ecosystem approach was being poorly implemented at domestic scales (leading to the commissioning of Shepard, 2008 by the IUCN and CBD). Waylen et al (2014[A]) suggests that this concern amongst members (of the COP) contributed towards a transferal of their interest away from broad implementation of the ecosystem approach *regime*, towards its targeted utilisation within related fields. For example, in integrated forest management, sustainable water management, and climate change mitigation (Raum, 2017).

However, by COP8 members of the COP were starting to lose the momentum behind the ecosystem approach and started looking for alternatives. As testament to this COP Eight (2006) witnessed a shifting of focus from the ecosystem approach to the results of the MA (Decision VIII/9), and the emerging ecosystems services narrative (as discussed in Section 2.1.1). Similarly, COP Eight also saw attempts to broaden the base of interests of the ecosystem approach by joining it to other related concepts[11].

COP Nine (2008) saw a request for the ecosystem approach to be considered in the achievement of the Millennium Development Goals (Decision IX/7), as well as asking for it to be considered in relation to, and mitigation of, climate change (JNCC, 2009). Moreover, COP Nine suggested that the findings of the MA be considered when implementing the ecosystem approach (Decision IX/15). Waylen et al, 2014[A] argue that by COP Nine policy-makers (in the COP) had stopped focusing solely on domestic implementation. Instead, they had shifted focus to joining it to other initiatives and policies in the hope of stimulating soft implementation. Whilst this soft implementation dynamic was starting to play a role in how the concept of implementation was conceptualised by policy-makers (i.e. reframing what 'successful implementation' looked like), there remained a lingering interest in reviewing domestic implementation

principles consist of 'fourteen interdependent practical principles, operational guidelines and a few instruments for their implementation that govern the uses of components of biodiversity' (CBD online). Their creation at COP seven was heavily influenced by the experience of the ecosystem approach (Trouwborst, 2009) and highlight the wider impact of the ecosystem approach experience and *policy learning* of the CBD.

[11] It was COP Eight that the *precautionary approach* was attached as a supporting concept to the ecosystem approach and was defined as 'given the uncertainty with defining the limits of ecosystem functioning under most circumstances, the precautionary approach should be applied'.This is once again a reference to the core tenet of the ecosystem approach that ecosystems are complex, and that caution should be used in environmental management situations (Trouwborst, 2009).

by conventional means. This interest can be seen manifested in the continued domestic implementation research proposed at COP Seven (Shepard, 2008) and conducted by Gill Shepard at the IUCN on behalf of the CBD. The results of Shepard's research (2008) were not seen until COP Nine and found that whilst there were some examples of successful domestic implementation of the approach, most were at community scales, and were not being promoted widely at national scales. Overall, Shepard (2008) found that there was very little evidence of systematic application of an ecosystem approach, and offered no new insights into how to reinforce, or increase implementation. Shepard (2008) concluded that full implementation of an ecosystem approach was a difficult task, especially at the national scale (a point in congruence with Smith and Maltby, 2003; and later reinforced by Mulongoy, 2011).

Interestingly, the conclusion that the ecosystem approach is a concept that has significant traction at local-domestic scales, but which fails to gain traction at national government-scales, is tangentially argued against in Fee et al (2009). Indeed, Fee et al (2009) found that in Canada and Germany the ecosystem approach was better understood and embedded at national governance scales than at local-domestic scales. The substantial difference between these two positions is the scale of sample, with Smith and Maltby (2003) and Shepard (2004; 2008) conducting large studies of over twenty different countries; and Fee et al (2009) conducting a smaller and thicker investigation in two 'northern hemisphere' countries only. The notion that the ecosystem approach is better understood by national-scales policy actors and institutions in northern hemisphere states juxtaposed with southern hemisphere states where it is better understood at local domestic scale actors is supported by Flitner et al (2009). This is a proposition addressed later in Chapter Seven.

In response to the findings of Shepard (2008), the secretariat of the CBD issued a response congruent with the weak *type two* nature of the ecosystem approach *regime*, where it:

> 'urged all parties to strengthen and promote the use of the approach more widely and effectively in concert with focusing on capacity building to support implementation' (CBD, 2009).

In defence of the CBD secretariat, they had also suggested that there was a need for 'promoters and leaders' to drive implementation of the approach, and for the preparation of easy-to-understand communication manuals for operationalisation (Decision IX/7). This argument for 'promoters and leaders' to drive implementation (Decision IX/7) is returned to in Chapters Six and Eight.

At COP Ten (2010) the 'Nagoya protocol on access and benefit sharing of Biodiversity resources'[12] was launched. The launch of the Nagoya protocol marked the end of the CBD's 2000 to 2010 strategic period, and the start of the 2010 to 2020 strategic period. The Nagoya Protocol was the created to be the substantive *regime* structuring the CBD's efforts during this strategic period (though, as argued by Schiele, 2014:44-50, *protocol* may be seen as just better articulated and enforced forms of *regimes*). Moreover, Nagoya also represented a shift for the CBD away from collegiate *type two* approaches to enforcement and implementation to (where possible) legalistic *type one* approaches to implementation (Article 15 of Nagoya Protocol). COP Ten also saw the creation of the Aichi biodiversity targets which, in taking a different road to the ecosystem approach, are 'a set of twenty, time-bound, measurable targets agreed by COP 10' (GEF, online)[13]. Although the Aichi biodiversity targets play the formative role in shaping contemporary EU and UK biodiversity policy (Goeteyn and Maes, 2011), they mark the watershed of the CBD's overt interest in the ecosystem approach.

2.4.4 Conclusion to the international ecosystem approach

Section 2.4 has articulated the waxing and waning chronological journey that the ecosystem approach has taken at the international scale. Broadly, Section 2.4 has highlighted how the ecosystem approach is a weak *type two* integrated natural resource management *regime*. The CBD has had no hard power, and little soft power,

[12] The Nagoya Protocol is an international protocol under the CBD which builds on and supports the implementation of the ecosystem approach through, in particular, one of its three objectives, 'the fair and equitable sharing of benefits arising from the utilisation of genetic resources'. It is based on the fundamental principles of access and benefit-sharing enshrined in the CBD.

[13] In 2010 the CBD adopted a new ten strategic plan for biodiversity as the fundamental aspect of their 2010-2020 strategic timeframe (CBD factsheet, 2012). Unlike the ecosystem approach (which in besides is not a protocol but a regime) these Aichi biodiversity targets are monitored and evaluated at national scales by 20 specific SMART targets (GEF, online).

to compel domestic compliance with an ecosystem approach within signatory states (congruent with Suskind and Ali, 2015). Thus, based upon the weak defence of the ecosystem approach as a *concept* (by both the CBD and the intended domestic users); combined with its comprehensive yet inherently acquiescent nature, has meant that the ecosystem approach is highly interpretative at sub-international, multi-level scales. Indeed, this proclivity for interpretation at different scales of governance is the theme running through Chapter Two (captured in Figure 2.3). This proclivity for re-interpretation can be seen in the format the European Union (EU) has taken to transposing the ecosystem approach into policy and directives, which is explored next in Section 2.5.

2.5 EU policy responses to the ecosystem approach

2.5.1 EU ecosystem approach policy framework

The EU is engaging with the CBD as an entity in its own right, and through its members who are predominately signatories to the CBD (Balmford et al, 2005). Indeed, all EU member states have completed their initial National biodiversity strategic action plans (Rauschmayer et al, 2009) (Figure 2.1). The EU also promotes the CBD's aims and recommendations through a raft of biodiversity directives, such as the Habitats Directive (1992) and the Natura 2000 network (2000)[14]. As an institution in its own right (as well as all of its CBD ratified member states) the EU submits periodic update reports to the CBD. Moreover, the EU's commitment to meeting its international biodiversity obligations and commitments is articulated through the 'EU biodiversity strategy to 2020' (as seen in Figure 2.3). Under the EU system of natural resource governance, implementation of an integrated ecosystem approach is promoted through various environmental policies and directives (Borja et al, 2010). Though, as Apitz et al (2006) point out, some EU directives play an indirect role in supporting integrative ecosystem approaches even if they do not use its framework at all. Vlachopoulou et al (2014) suggests that this includes the Habitats Directive

[14] Natura 2000 is a pan-European network of nature protection areas established under the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation designated by member states under the Habitats Directive, and incorporates Special Protection Areas which they designate under the 1979 Birds Directive.

(92/43/EEC), the Birds Directive (79/409/EEC), and the Water Framework Directive (2000/60/EC). That all said, only one EU directive has sought to directly adopt the ecosystem approach.

The Marine Strategy Framework Directive (2008/56/EC) instructs EU member states to adopt programmes of marine management and spatial planning into national legislation. Based upon achieving 'good environmental status' for EU seas by 2020, this Directive mandates all EU member states to develop a marine strategy which utilises an amended iteration of the ecosystem approach to marine management (e.g. Borja et al, 2011) In seeking to create this 'marine ecosystem approach' the Directive built upon the CBD ecosystem approach. However, due to the perception that the CBD iteration of an ecosystem approach was too unwieldy (Farmer et al, 2012) a new and original marine strategy framework Directive-iteration was created. Farmer et al (2012) describe it this new iteration as a:

> 'resource planning and management approach that integrates the connections between land, air and water and all living things, including people, their activities and institutions.'

This new iteration of the ecosystem approach is operationally-focused, and stresses an integrative, adaptive management perspective. This Directive provides the clearest EU policy driver for implementing a form of the ecosystem approach in UK marine contexts (Mee, 2005). Certainly, EU environmental policy relies on upon transposition and implementation by member states (Jordan, 1999). However, research suggests that there can often be significant differences between EU environmental policy outputs and policy outcomes (Glachant, 2001; Knill and Lenschow, 2001) (i.e. *implementation deficit*); and in some cases EU environmental policy may not be implemented at all (The EU Environmental Implementation Review, 2017) That said the EU does exert a degree of environmental policy implementation pressure upon its member states (The EU Environmental Implementation Review, 2017) and consequently the EU-originated Marine Strategy Framework Directive exerts a degree of pressure upon the UK government to consider a form of an ecosystem approach.

The effects that EU and other drivers have had on the UK-national response to the ecosystem approach is addressed next, in Section 2.5.

2.6 The UK-scale ecosystem approach

As shown by Figure 2.2, and argued at the conclusion of Section 2.4.4, the ecosystem approach is malleable to reinterpretation at every level of governance that it percolates down through. Section 2.5 then articulated an argument about the ecosystem approach's inherent conceptual plasticity. Raustiala (1997) has suggested that *weak* regimes are amenable to reinterpretation as they are transposed into national legislatures to suit the transposers national–scale interests, drivers, and pressures. This appears to be the case for the ecosystem approach, as seen in Figure 2.2 each scale of natural resource governance pertinent to the UK has witnessed reinterpretations (including in the devolved nations of Scotland and Wales, and England). Section 2.6 next addresses how the ecosystem approach has been reinterpreted at the UK-scale and Section 2.7 addresses this dynamic at the English-scale. Consideration of the Scottish and Welsh devolved reiterations (comparative to England) are considered in Kirsop-Taylor (2018[A]) but are not addressed in thesis.

2.6.1 UK-CBD compliance with the ecosystem approach

Congruent with its commitment to the CBD and perhaps its desire to project an image of responsible leadership in multilateral global environmental governance, the UK Government has submitted five periodic progress reviews to the CBD. These reviews have self-reported the UK's progress in complying with decisions of the COP, including those pertaining to an ecosystem approach. Despite their inherent weaknesses[15], self-

[15] Although self-reporting compliance is often the only mechanism available to MEA policy makers, as Heyes (2000:99) points out, it is a fundamentally flawed mechanism for ensuring compliance at all scales of environmental governance. Johnston (1997:227) highlighted how in the initial stages of the CBD there was a lot of optimism that self-reporting coupled with knowledge sharing and collegiate collaboration would be sufficient to monitor domestic compliance and enable/facilitate implementation. However, evaluating compliance is a broadly complicated process. Clear lines of differentiation between 'compliant' and 'non-compliant' behaviours rarely exist, and instead many fall into ambiguous semi-compliant states (Chayes et al, 1998). Thus, it can become difficult to gauge *regime* effectiveness (i.e. whether the ecosystem approach stimulated genuine behavioural change or whether any change is incidental). Arguably, self-reporting methods for evaluating environmental *regimes*, or MEA, compliance is a flawed method; its limited use in monitoring compliance with MEA is discussed in the *regime*

reported progress reviews are a common compliance instrument for MEA, including the CBD (UNEP, 2010:17; Article 26 CBD); and as noted in Section 2.2, these self-reported progress reviews are the CBD's primary instrument for monitoring domestic compliance. Through these reports it can be seen that the UK government broadly considers that it has historically (and contemporaneously) made significant strides in implementing decisions of the COP (Rosario Ortiz Quijano, 2014). However, as per footnote 16, a critical approach should to be adopted towards self-reported progress reviews and indeed, there have not been any rigorous independent reports from the UK on its implementation success or otherwise of the ecosystem approach. However, the qualitative tone and content of the first three reports (DETR, 2001; Defra, 2005; Defra, 2009[B]) suggested that the UK government felt that it has taken a leading international role in complying with the decisions of the CBD. Critically however, the fourth report (Defra, 2009[B]) highlighted how the changing political landscape in the UK had affected implementation of elements of the CBD, and especially the ecosystem approach:

> 'Following devolution and a number of other top-level drivers, such as the 2010 (Aichi Biodiversity) targets, the findings of the Millennium Ecosystem Assessment and the greater need to address the effects of climate change, a new strategic framework was published in 2007. Entitled 'Conserving Biodiversity – the UK approach', it is based upon the twin principles of partnership and the ecosystem approach'.

This was an important point where the UK government articulated to the CBD a new direction regards national biodiversity policy that was no longer going to explicitly and solely promote an ecosystem approach from a national-scale policy platform. That said, the UK government had been promoting an ecosystem approach in policy (at least in rhetoric since its inception (1997) until this point (2009). Thus, it becomes clear that the UK might have been 'talking the talk', but in reality have they also been 'walking the walk'? These national-scale efforts at promotion in policy (talking the talk) are discussed next in 2.6.2.

literature (Chayes et al, 1998; Donaldson and Grant-Vallone, 2002; Creamer and Simmons, 2015). The most pressing challenge it faces is the propensity for countries to give inaccurate reports and express *self-reporting bias* (Raustiala, 1997; Donaldson and Grant-Vallone, 2002).

2.6.2 UK-domestic policy response to the ecosystem approach

The UK government has responded to the ecosystem approach in national policy. From its launch (1997) until 2007 the UK promoted the use of an ecosystem approach in its CBD-Malawi principles format. Indeed, the UK was an early adopter and proponent of the ecosystem approach (with the CBD COP community). Although the UK government suggested that this was due to its pre-existing research and practice alignment towards integrated natural resource management (Department for Environment, Transport and the Regions, 2001), this again was 'self-reported', and so needs to be treated critically. In 2007 Defra published the policy document entitled 'Securing a natural healthy environment: an action for embedding an ecosystems approach' which reasserted the government's commitment to promoting and inculcating an ecosystem approach in policy and practice around the UK. This policy-document suggested that the UK faced some significant biodiversity challenges in the future, and that these challenges would drive the use of the ecosystem approach. However, it also recognised that 'mainstreaming' the ecosystem approach into domestic integrated management practices had to be seen as an:

> 'ambitious and long-term agenda that will require us to overcome many challenges – institutional, political, methodological and scientific'.

However, it also noted that:

> 'such an approach is not a formula to be applied, but a framework that can be adapted to suit all issues and situations.

This was an important point because it highlighted how the UK Government suggested the ecosystem approach is important, but not enough to make statutory in UK legislation (what Wentworth 2011 might consider a 'low politics' concern). Certainly, this policy-document did institute a new 'ecosystem approach research programme'[16]

[16] Annex 7 of 'Securing a natural healthy environment: an action for embedding an ecosystems approach' (Defra, 2007) articulated the ecosystem approach research agenda. This was comprised of previous projects such as 'characterising the policy environment' (NR0105); 'Public understanding of

(2007-2012) which led to many operationalisation-facing outputs (Haines-Young and Potschin, 2008; Fish et al, 2011). However, this programme of research/support has now ended, with no obvious successor. Moreover, it also suggested that due to a variety of factors (Climate Change, post-Nagoya arrangements, and UK devolution) that there was a need for a new distinctive UK-iteration of the ecosystem approach. This new iteration which would seek to reduce complexity and aid comprehension by domestic users, and is reproduced below in Table 2.3:

Table 2.3. The DEFRA (UK) principles of taking an ecosystem approach

No	Defra principle
1	Taking a more holistic approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services
2	Ensuring that the value of ecosystem services is fully reflected in decision-making
3	Ensuring environmental limits are respected in the context of sustainable development, taking into account ecosystem functioning
4	Taking decisions at the appropriate spatial scale while recognising the cumulative impacts of decisions
5	Promoting adaptive management of the natural environment to respond to changing pressures, including climate change.

Source: Defra, 2007

the concepts and language around ecosystem services and the natural environment' (NR0115). This programme also included ongoing projects such as the 'development of case studies to develop tools and methodologies to deliver an ecosystem approach', including a project in Somerset (NR0111) and 'England's terrestrial ecosystem services; the rationale for an ecosystem-based approach' (NR0107) (Haines-Young and Potschin, 2008); and the ecosystem approach in UK marine contexts (Laffoley et al, 2004). This programme of activities was further enhanced by the work of the UK NEA (2010) and NEA follow on project (NEAFO) (2014) which addressed many subjects relating to the ecosystem approach, but more specifically the ESF, in a UK context.

Haines-Young and Potschin (2008:8) highlighted how transposing the ecosystem approach into UK National biodiversity policy and legislation was always going to be a challenging task due to the ecosystem approach's inherent *systems* approach and multi-disciplinarily. Critically however, as argued by Kirsop-Taylor (2018[A]) other devolved UK nations (though not England) with the pre-requisite political impetus and support have inculcated ecosystem approaches into national biodiversity policy and practice frameworks. Fundamentally though, the ecosystem approach was never transposed in UK domestic law and instead was discussed purely in non-binding, aspirational policy-documents such as the Defra (2007) policy-document. In characterising this policy-document Scott et al (2014:25) noted that it was more about:

> 'Focusing on holism, ecosystem services in decision-making, respecting environmental limits, considering different scales and cumulative impacts, and applying adaptive management…. as well as the engagement of stakeholders in decision and plan-making'.

Ostensibly, contemporary UK interest in the ecosystem approach resides in the latest updated version of 'securing a natural healthy environment' (Defra, 2015). This updated policy-document presents an introductory guide for operationalising an ecosystem approach in policy and decision-making, and whilst it makes many points about practical operation, including a self-assessment checklist for land managers, it still considers the ecosystem approach as being:

> 'A generic framework for incorporating the holistic consideration of ecosystem services and their value into policy, plan and decision-making' (Defra, 2015:12).

Therefore, from Defra's perspective, the ecosystem approach is highly interpretative, and is now considered a subset of ecosystem services (see Section 2.2.1); though as articulated in Section 2.3 the ecosystem approach and ecosystem services are, in fact, different concepts. However, this conflation and uncritical use of terminology also exists in other UK policy documents, such as the 'National planning policy framework' (2011), and the 'Natural Choice: securing the value for nature' white paper (2011). The 'Natural choice' was the first environmental white paper since 1990 and synthesised

the many policy recommendations and imperatives from these intervening years. This included the movement towards integrative landscape-scale approaches and alignment towards the CBD's new 'Strategic plan for biodiversity 2011-2020'. This White Paper extols the use of the ESF and aligns itself with the conclusions of the 'Making space for nature' (i.e. the Lawton report, 2010)[17]. The 'Natural choice' does not name the ecosystem approach by name, but instead is heavy with the language of natural capital, ecosystem services, and adaptive management. It also called for the creation of an Ecosystems knowledge network[18] to support the implementation of ESF and the ecosystem approach (Defra, 2011:66).

In summary, policy documents and self-reporting suggest that the UK government considers that from 1997 until 2009 it actively sought to promote and operationalise the ecosystem approach domestically. Moreover, these sources suggest that the UK government considers that it has been a leading international actor in the process of trying to operationalise an ecosystem approach at domestic scales. Critically however, these claims appear only partially accurate and whilst certainly the ecosystem approach was used to frame UK government biodiversity policy, these efforts have not been accompanied or supported by its inclusion in any UK national-scale legislation. Certainly, the UK government have articulated their own response to the Malawi principles (Table 2.3), though as per Figure 2.2, simply re-articulating the Malawi principles has been a common and 'low effort' form of policy response to the ecosystem approach taken around the UK (Kirsop-Taylor, 2018[A]). This somewhat mirrors the argument of Wentworth (2011) who suggests that 'biodiversity policy' has always been seen as a 'secondary policy objective' of the UK government, and that this consideration has had an impact on how they have interpreted and promoted an ecosystem approach. Whilst the UK iteration of the Malawi principles (Table 2.3) are supported by an updated version of the 'securing a natural healthy environment' policy-document (2015); this document suggests that the minds of the UK

[17] 'Making space for nature' (2010) highlighted the need for greater integrated landscape scale thinking towards UK environmental management. This report championed the cause of UK biodiversity and explicitly linked its protection and good management to societal and economic benefits. Critically, it promoted the use of integrated landscape scale approaches, adaptive management style approaches and the central value to engaging society and stakeholders into environmental management practice.
[18] The ecosystems knowledge network is an independent organisation set up (and initially funded) by the UK Government under commitment 6.2 in the Natural choice (2011). Its aim is to act as a network hub for activities supporting the application of an ecosystem approach in the UK.

administration the ecosystem approach should now be seen as an adjunct to ecosystem service thinking. Thus, it is considered that the UK government has now essentially progressed from serious efforts to promote and deliver a domestic ecosystem approach agenda and has instead allowed responsibility for this to pass to devolved administrations and governance. Indeed, as per Wentworth's (2011) contention that the UK government views biodiversity policy as a 'secondary policy objective' then the alacrity with which they passed responsibility for engaging with an ecosystem approach to the devolved nations is perhaps better understood. Although there is value and interest in comparative evaluations on how the devolved nations have responded in policy and practice to the ecosystem approach, this comparative analysis is not made here, but can be seen in Kirsop-Taylor (2018[A]). Instead, this thesis next considers the English-scale of natural resource governance which, as per Figure 2.2, is the lowest functional level of implementation that an ecosystem approach policy-notion has percolated down to in this context.

2.7 The ecosystem approach in England

The first dedicated English policy-document to mention the ecosystem approach was 'Working with the grain of Nature: A biodiversity strategy for England' (2002). This policy-document articulated the high-level English biodiversity targets aligning with the CBD, its use of indicators and monitoring, and talks (in broad terms) about 'taking a holistic approach'. 'Working with the grain of nature' did not however specifically acknowledge, or discuss, an English ecosystem approach, or give detail about operationalising an integrated holistic perspective. This was followed by 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' (Defra, 2011), which superseded 'Working with the grain of nature: a biodiversity strategy for England' (2002). This was the first policy-document to specifically articulate an English strategy for biodiversity. 'Biodiversity 2020' built upon 'working with the grain of nature', though it was also reflective of the changes wrought by the CBD's 'biodiversity strategic plan 2011-2020' (e.g. the Aichi targets, the MA and NEA, and a changing focus towards a natural capital approach). Critically however, 'Biodiversity 2020' articulated a key English interest in the ecosystem approach, through its *outcome 1c* commitments.

These English commitments are a partial re-articulation of Aichi Target 11, and state that:

> 'By 2020 at least 17% of land and inland water, especially areas of particular importance for biodiversity and ecosystem services, conserved through effective, integrated and joined up approaches to safeguard biodiversity and ecosystem services including through management of our existing systems of protected areas and the establishment of nature improvement areas'.

Thus, consideration for an ecosystem approach appears to have been added as addendum to another, later, international natural resource governance commitment. Interestingly, 'Biodiversity 2020' (2011) is the only government policy-document articulating an ecosystem approach in England, though it suggests that English biodiversity protection and management should build upon 'Making space for nature' (Lawton et al, 2010), the NEA, and the Nagoya Protocol (and Aichi biodiversity targets). It suggests that this should be done to create a national strategy which is 'integrative, socially minded, economically embedded, and mindful of cultural and spatial scales' (*sic*). 'Biodiversity 2020' remains the pre-eminent policy document considering the English approach to biodiversity conservation, though critically it only discusses the ecosystem approach briefly around support for 'local delivery'.

The English policy response to an ecosystem approach is 'delivered' to local-domestic policy consumers (or those for whom the policy was intended) by Defra and Natural England[19]. 'Delivery' of the ecosystem approach as a policy is conducted through a range of instruments and activities which can all be classified as 'knowledge dissemination' (i.e. a 'best practice' manual, the activities of the EKN, a now concluded 'research programme' etc). That is, a 'light touch' transmission and endorsement of the ecosystem approach as a policy-notion[20] for environmental land management

[19] Although Natural England and Defra are the two main public bodies promoting an ecosystem approach in England other statutory agencies have been considering it in their work, most notably in the Environment Agency. Indeed, the Environment Agency has previously sponsored research into the ecosystem approach, and their consideration of it has been led by their own inter-agency policy entrepreneurs (Everard, 2014).

[20] The ecosystem approach is inherently multi-disciplinary and can be described and defined in many different ways depending on situation, context, and positionality. How it is *described* is broadly reflective

best-practice. The ‘delivery’ of policy framed as ‘best-practice’, is considered the weakest in the toolbox of environmental policy instruments (EPI) (Jordan et al, 2003; Connelley et al, 2012). Moreover, the knowledge dissemination EPI by which the ecosystem approach has been delivered in England can be described by two broad strands of activity.

The first strand of activity is the Natural England sponsored ‘ecosystem approach handbook’ for English management partnerships (Porter et al, 2014). This handbook recognises that the ecosystem approach of the CBD is complex, and prone to poor interpretation. It therefore suggests to managers and partnerships that an application of the approach should instead focus on three core principles of valuing natures services, involving people, and understanding how nature works. In addition to suggesting a distillation of the Malawi principles (from twelve to three), Porter et al (2014) also suggested a process for ‘taking an ecosystem approach’. This process can be seen illustrated in Figure 2.3.

of the field of enquiry that the describer is adopting. For example, ecologists might define it in terms of being a ‘framework’, pure political scientists might define it as a ‘policy’, or international relations scholars might define it as a ‘regime’. Thus, its definition is contingent of the describer and the situation. This thesis is approaching an exploration of the ecosystem approach from multiple fields, though broadly the form of enquiry attempted here is probably best described as being ‘political ecology’. Conscious of the logic outlined above, and the nature of this enquiry, this thesis hereafter describes the ecosystem approach as being a ‘policy-notion’. That is, both a policy, as well as series of ideas and notions about how it should function. This is important insofar as it allows the ecosystem approach t0 be explored as both a policy and in terms of being a contested schema of ideas and forms, congruent with the later exploration of *ecosystem science*.

Figure 2.3. The Natural England ecosystem approach

Source: Porter et al, 2014

The second strand of activity involves where Natural England has undertaken periodic evaluations of the implementation of the ecosystem approach in English settings. This includes evaluating implementation in English uplands (Waters et al, 2012), and more recently through a broad-based *outcome 1C self-assessment* exercise (see Annex B). This latest evaluative exercise was conducted under the auspices of meeting the UK *1c commitment* made through the Nagoya protocol. This *outcome 1c self-assessment* is an exercise conducted by Natural England on behalf of their terrestrial biodiversity group[21]. English national parks were the first tranche of participants for this exercise (Sept, 2016); English Areas of Outstanding Natural Beauty (AONB) received the assessment in late 2016; though critically biosphere reserves were not scheduled to receive this exercise. The *outcome 1C self-assessment* exercise aims to help

[21] The 'terrestrial biodiversity group' is chaired by Natural England, and made up of stakeholders with major delivery roles (e.g. Environment Agency, Forestry Commission, Farming reps, NGO's) in the management of 'terrestrial outcomes 1 and 3' of the Natural England 'Biodiversity 2020 strategy'.

conservation designations understand their existing alignment towards an ecosystem approach through answering a series of questions which correlate to their management plan. Critically however, it does not help them understand or create action plans towards better alignment with the approach. Responding to the assessment is entirely voluntary, and it does not appear (at time of publication) that its results will be substantively used to affect policy learning or behavioural change within Natural England. Moreover, it is not envisaged (by Natural England) that its results will be made public, and so any opportunity for external validation contributing towards policy learning may be lost. Considering that Natural England is currently embarking on a process of institutional realignment towards an ecosystem approach (Natural England, 2016), the decision to not seek wider validation of the results from the *outcome 1C* is confounding. That said, institutional realignments towards *systems*-based ecosystem approaches can be challenging (Scott et al, 2014; Waylen et al, 2015). Thus, Natural England's reticence to make public its successes or setbacks in terms of overcoming institutional inertias and legacies on its 'road to an ecosystem approach' may be understandable. Certainly, the synopsis of Natural England (2016) suggest that they are attempting what Scott et al (2014) would describe as a strategy of 'incremental' movement towards an ecosystem approach. Such an incremental transition towards an ecosystem approach will take many years, and it should not be expected that results will be immediately evident. Natural England suggest that, in practice, this institutional transition will mean that their future conservation decision-making will better 'involve people, understanding how landscapes and seas work, and the goods and services they provide, in an integrated way' (Natural England, 2016:5-6). This is to be supported by Natural England adopting a more 'place based approach' to management, which it is imagined will reinforce the transition towards an ecosystem approach (Natural England, 2013).

The results of Natural England's organisational transition might be expected in future strategic reviews, and in internal audits, though none were available at time of writing. However, this is still an ongoing process that raises as many questions as it answers. For example, to what degree will this transition be actively and passively communicated to local-scale English stakeholders? To what degree will Natural England seek to use this transition to leverage similar changes towards an ecosystem

approach within the wider English land management sector? How might this transition be affected by additional public austerity? Critically, how will local-scale organisational and partnership-scale changes towards an ecosystem approach being monitored and evaluated not that the *outcome 1C* is discontinued? These unknown elements point towards a future research agenda that is discussed in Chapter Nine.

In summary, Section 2.7 has shown how the ecosystem approach is conceived and 'delivered' as a policy-notion for the English domestic-scale users. However, Section 2.7 did not speak to the degree to which these efforts have *actually* been affecting behavioural change at local domestic scales towards use of an ecosystem approach. Instead, this final scale of implementation at the interface between policy and practice is considered next in Section 2.8.

2.8 Domestic-local scale implementation

2.8.1 The ecosystem approach domestic-scale implementation literature

At the final scale at the bottom of the multi-level hierarchy (in Figure 2.2) lie the domestic-local scales where responses to the ecosystem approach policy-notion are being considered and operationalised. Sources in the wider policy literature suggest that that based upon weak, vague, and interpretative nature that the domestic or local-scales might be the most decisive for affecting implementation of policy-notions of this sort (Stucki and Smith, 2011). Certainly, transposition of the ecosystem approach into national legislative frameworks in other countries (Jones and Taylor, 1999; Smith and Maltby, 2003; Garcia and Cochrane, 2005; DeYoung et al, 2008) as well as in the UK (Scott et al, 2014), play important roles in affecting implementation of ecosystem approaches. However, the majority of the internationally-situated research literature still highlights the primacy of domestic local-scales in determining implementation of policy-notions of this kind.

Any investigation into the policy implementation of an ecosystem approach in domestic UK settings is necessarily nested within a wider and richer NRM literature. This NRM literature is consistent with the fundamental ecosystem approach implementation dynamics presented in this Chapter, and broadly supports the notion

that multilevel NRM governance is a complex process (Ostrom, 1990; Campbell et al, 2001) with significant challenges of mismatches across geophysical scales and political/governance levels (Cash & Moser, 2000). This literature highlights the fundamental challenge in translating integrated NRM policy agenda/ideas through instruments (Sterner, 2003) into operational actions (Keysar, 2005) and plans (Joseph et al, 2008) across multi-level governance scales (Lockwood, 2010). Whilst multi-level bridging actors can facilitate 'better' multi-level NRM policy transmission (Bebbington et al, 2006) this literature also highlights the intrinsic hierarchical nature of multi-level governance constructs (such as presented in Figure 2.3) which can exacerbate unequal power dynamics and environmental injustice (Swallow et al, 2001). That said, the final domestic scales at which ideas and policy notions are operationalised has been shown to be particularly 'important' in the implementation of integrated approaches to NRM. The value of engagement and discourse with domestic local-scale NRM actors has been argued conceptually (Parkins & Mitchell, 2005) and practically (Fleeger & Becker, 2008). Fleeger and Becker (2008) have furthermore highlighted the importance of community and local governance capacities for the longevity of integrated NRM approaches at local domestic scales. This literature also highlights the potential barriers to the operationalisation of integrated NRM approaches (Keysar, 2005; Steyaert & Jiggins, 2007) including socially constructed barriers (Clark & Stankey, 2006; Mitchell et al, 2007; Fabre et al, 2012), institutional and governance barriers (Gottrett & White, 2001; LaChappelle et al, 2003; Stucki & Smith, 2011), in addition to geophysical and scalar barriers to operationalisation (Lurie & Hibbard, 2005; Rodriguez-Izquierdo et al, 2010).

Whilst a review contextual integrated NRM literature was illuminating this study was specifically concerned with the domestic local implementation of an ecosystem approach as a discrete policy-notion; and so a targeted review of the 'ecosystem approach implementation' literature was conducted. This review revealed only a limited number of specific studies exploring implementation of the ecosystem approach at domestic local-scales in the UK (Dernie et al, 2006; Scott et al, 2014; Waylen et al, 2014[A]; Joao and Phillips, 2017), and England. That said, Fleeger and Becker (2008) the wider ecosystem approach implementation literature highlighted how domestic local-scales were critical in terms of determining final implementation

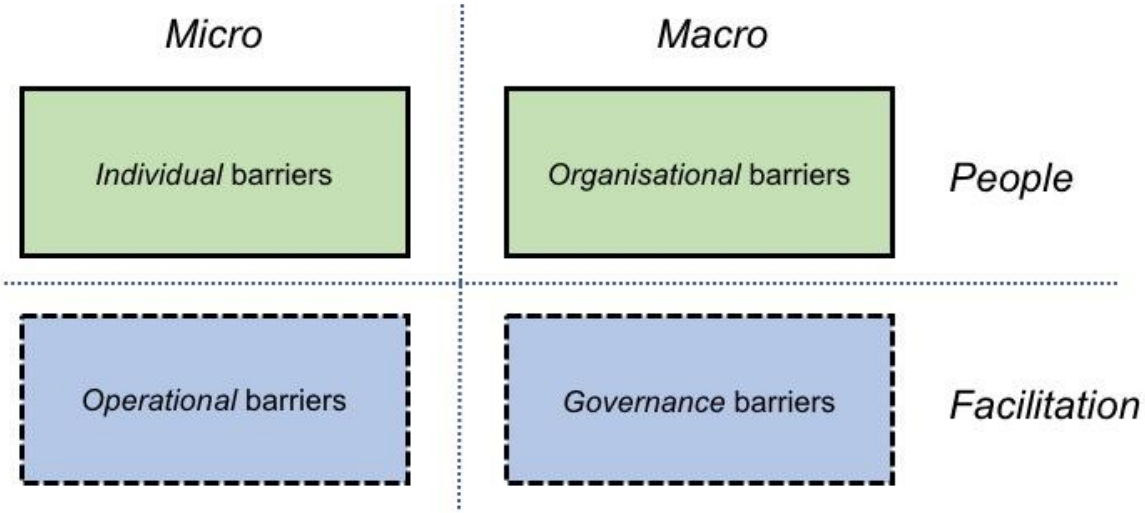
(Shepard, 2004; 2008; Raum, 2017). However, the complete lack of dedicated studies exploring the domestic scale implementation of ecosystem approaches in English NRM settings was considered a clear 'gap' in the research literature. Though the limited literature investigating implementation of ecosystem approaches in other international domestic settings suggested that broadly all nations experienced *implementation deficits* at domestic scales (for different reasons related to domestic policy configurations, geography, resources, culture and a variety of other reasons). That said, this literature still suggested that domestic scales might be the critical scales for affecting implementation. In this context the limited literature suggested that some efforts had been undertaken by English national institutions and policies to impact domestic implementation and consideration of an ecosystem approach by its intended final users. However, the literature review highlighted how there were very few investigations of implementation by final users in UK natural resource settings (e.g. Dernie et al, 2006; Joao and Phillips, 2017); and none specifically in English settings. Thus, critically considering implementation of an ecosystem approach in a domestic English natural resource setting had the potential to be both original and significant research; and became the focus for this thesis.

Considering the paucity of research explicitly exploring the *implementation deficit* of the ecosystem approach in English local-scale contexts, a significantly wider literature of ecosystem approach implementation studies from around the world and multiple different governance scales were identified and reviewed. Based upon keyword searches across three platforms (Google scholar, Web of science, Science direct) this led to thirty nine studies which were broadly taken to be 'the literature' with regards to this research (all the studies in 'the literature' can be seen at Annex C). This research thesis is concerned with the barriers to implementation at local scales (i.e. why the *implementation deficit*) and so those studies addressing local-scale barriers to implementation were given particular credence when conducting a full review of the literature at Annex C[22]. Instead, the results from the literature (given in detail at Annex C) were synthesised into a typology of four distinct 'categories of barrier' to domestic implementation, and this this typology is presented below in Figure 2.4. This typology

[22] Non-domestic scale barriers (i.e. national or EU scale) identified in the literature in Annex C were removed, because this was an analysis of the domestic-scale barriers.

articulates the particular barriers to implementation of an ecosystem approach as a discrete policy notion and also highlights many similarities to the generic barriers to other forms of integrated NRM. Indeed, in many ways this highlights the many commonalities in implementation barriers between the ecosystem approach and other framework approaches to integrated NRM.

Figure 2.4. Typology of barriers to implementation of an ecosystem approach



Source: created by author

The four categories of barrier given in Figure 2.4 are positioned in a matrix, with what the literature suggested were the two relatively less understood barriers on the top row, and the two relatively better understood barriers on the bottom row. This is not to suggest a significant difference in importance between the top and bottom categories of barrier, but it was still a differentiation in terms of the degree that these particular types of barriers were seen and discussed in the literature (given at Annex C). The literature presented in Annex C broadly suggested that domestic-local scale barriers to implementation can be seen in both 'macro' and 'micro' scalar dimensions, and broadly coalesced around categories of *people* and *facilitation*. Put another way, the literature broadly suggested that implementation of an ecosystem approach at local-domestic scales was predicated upon *people* and

facilitation. Although the literature was more heavily balanced towards *facilitation*-centric research, the importance of *people* was recognised as important. Moreover, *people* were seen as perhaps the more important subject for scholarly enquiry, considering the degree to which people-centric barriers were under-represented in the literature. The matrix of barriers to implementation displays a degree of commonality with a number of contributions from the integrated NRM literature discussed briefly above (e.g. Keysar, 2005; Clark & Stankey, 2006; Stucki & Smith, 2011). The barriers outlined in Figure 2.4 are similarly reflected in research from the street level bureaucracy tradition (Chapter Four). For example, in the streel level literatures about how *individual* decision-making (Brodkin, 2011; 2015; Evans, 2016) and *organisational* decision-making (Öberg & Bringselius, 2015; Cohen, 2018) are effected by managerialist structures and processes; and under 'new' modes of governance (Sager et al, 2014). Similarly, Edwards and Saltman (2017), and Phulkerd et al (2017) have recently articulated the kinds of *operational* barriers that might stymie organisational policy implementation at the street level. Whilst these extant literatures and research perspectives on these barriers to implementation are illustrative and interesting, the matrix in Figure 2.4 nevertheless still represents an original synthesis of the barriers to implementation of a terrestrial ecosystem approaches (as conceived by the CBD). Figure 2.4 has originality where it highlights how the challenges of implementing a complex yet weak policy-notion faces in parts similar challenges (identified by other literatures) but different challenges in other areas. In short, the literature suggests that some of the challenges and barriers to implementing an ecosystem approach has similarities to identified barriers in other policy areas and from other perspectives, though in some other ways evidences some unique challenges. These challenges are explored below in the following sub-sections.

2.8.2 People: organisational barriers

The literature discussed how *organisations* at domestic scales were often primary targets for implementation of an ecosystem approach (Rice, 2005; Wilson, 2010; Kidd et al, 2011). The literature also considered that the nature of these *organisations* can play important roles in driving their potential for implementing an ecosystem approach (IEMT, 1997). The degree to which the nature of organisation affects its ability to adopt integrated management practices can have effects on both *individuals* within the

organisations (Smith and Maltby, 2003; Rice, 2005; Shepard, 2008; Fee et al, 2011), as well as the organisation itself. Transitioning organisations from single-discipline, or unintegrated natures and processes to integrated, ecosystem-approach centred structures and processes can be fraught (Cowan et al, 2012; Scott et al, 2014; Waylen et al, 2015). Waylen et al (2015) suggested that organisational transitions towards more integrated practices and modalities might be stymied by their historic legacies of functioning in certain ways or under certain processes (i.e. institutional legacies). Similarly, the work of Scott et al (2014) in the NEAFO synthesis report (2014:11) proposed a spectrum of different kinds of organisational transition towards ecosystem approaches. These 'models for mainstreaming the ESF and an ecosystem approach' proposed a spectrum from an 'organisational retrofit' to a full 'ecosystem approach-led' approach. The key point being that organisations can change and adopt towards an ecosystem approach but that this process can be complicated by issues of legacy, inclusivity, and ambition. Moreover, the literature highlighted how organisational change towards ecosystem approaches can be affected by a lack of internal skills, methodologies, or equipment to undertake a transition. Pushpam et al, (2008) discussed this in terms of 'access to data and monitoring' methodologies, though others discussed the dynamic more broadly (Piet et al, 2008; Potschin et al, 2011). The literature also highlighted challenges where organisations fail to engage their wider stakeholder community before seeking to transition towards ecosystem approaches (e.g. Kellog, 1997). This 'engagement in change' dynamic was seen in two of the international multi-case research projects investigating the ecosystem approach within UNESCO biosphere reserves (Smith and Maltby, 2003; Flitner et al, 2006).

These studies highlighted the importance of 'carrying stakeholders' along in ecosystem approach organisational transitions in biosphere reserves. There is, of course, a difference between organisations acting as conduits for translating the policy-notion of an ecosystem approach to other final audiences, as well as being changed towards an ecosystem approach themselves. Indeed, it was noted that *organisations* can both act as conduits for the idea of an ecosystem approach, as well as be receptive to internalising the notion themselves. Thus, organisations can be both deliverers of the policy-notion as well as consumers of the policy-notion as well.

2.8.3 People: *individual* (human) barriers

The literature also revealed the critical importance of *individuals* within organisations acting to either enable or disable use of an ecosystem approach (Jones and Taylor, 1999; Murawski, 2007; Fee et al, 2011). Considering the difficulty of operationalising an ecosystem approach to management convincing and enthusing *individuals* was seen as an important aspect affecting implementation. Both Kellogg (1997) and Smith and Maltby (2003) noted how when *individual* stakeholders do not feel that they have actively engaged with the process of ecosystem approaches they can feel disgruntled and inclined to disconnect from the process entirely. That said, the literature also noted how transitioning *individual* thought and action from old patterns of work towards new, integrated patters of work can be challenging. Fish and Saritisi (2015) have highlighted how taking time to carefully and patiently explain ecosystem approaches to individuals can yield results in terms of comprehension and engagement with the concept. In reverse, if this process is rushed or worse mandated upon *individuals* it runs the risk of failing because the ecosystem approach is difficult to operationalise at *individual* scales. Thus, the literature suggested that at *individual* scales explanation of an ecosystem approach needs to be careful and patient, with reinforcement and examples given (Morishita, 2007). This is, in many ways, a 'change management' problem and unless handled positively (either with incentives, training or as an opportunity for co-produced co-management), then it might impact effectiveness and efficiency (Farmer et al, 2012). This has the potential to escalate, and collectively build towards the kind of organisation-wide legacy inertias outlined in Waylen et al (2015). Both Scott et al (2014) and Fish and Saritisi (2015) highlighted the right kinds of 'training' can help offset this problem. Both Boyle et al (2001) and Shannon et al (2011) talked specifically about how deficits of specific training in handling different kinds of data individually and collectively can impair ecosystem approach thinking (also noted by Fee et al, 2011).

Critically, the literature (see Annex C) was emphatic that (due to its weak nature and its inherent complexity) transitioning *organisations* and convincing *individuals* towards ecosystem approach thinking is contingent upon visionary and dynamic leadership (IEMT, 1997; Potschin et al, 2011; Holt et al, 2011). This was a point highlighted by

the CBD on many occasions (Decision VI/26; Decision IX/7). Although *individuals* can, with time and patience (Fish and Saritisi, 2015) be convinced of the utility of an ecosystem approach, this often requires 'leaders and explainers' to drive that change.

2.8.4 Facilitation: *operational* barriers

The literature highlighted how many of the barriers to implementation at local scales were operational in nature (Hartje et al, 2003; Bianchi et al, 2006; Fish and Saritisi, 2015). That is, many of the challenges to implementation stemmed from understanding how to turn the Malawi principles (or Defra principles) into tangible actions. Whilst the utility for using the ecosystem approach in operational decision-making contexts has been well made (Haines-Young and Potschin, 2008; Pomeroy and Douvere, 2008; Fish et al, 2011), the literature suggested that operationalisation can still be challenging (Scott et al, 2014). Certainly, there have been attempts in the UK to meet this challenge through guides for 'managers' (Porter et al, 2014) and 'communities' (Scotgov.com; Pepper, 2016) to better facilitate operationalisation. Indeed, the literature review highlighted how there is a substantial body of guidance available for users UK users of an ecosystem approach (or those considering it).

However, the literature review also highlighted some of the more pressing operational challenges that operationalising an ecosystem approach still faces. These include making an ecosystem approach 'place' and 'geography' based (Potschin et al, 2011), in forms that allow and accommodate 'fuzzy' and flexible boundaries (Pepper et al, 2016), especially when managing across political-geographic boundaries (Van Hoof, 2015). Shepard (2004:9) in their periodic assessment of the international implementation of the ecosystem approach for the IUCN, suggested that defining geographical boundaries had to be the first step in ecosystem approach assessments. Though as Shepard later suggests, (2004:12) challenges to defining the geographic boundary often go hand-in-hand with challenges to identifying and effectively engaging stakeholders in the area. The literature also noted how domestic users of the ecosystem approach often lack for tools to support operationalisation (Smith and Maltby, 2003; Morishita, 2007). This was a common theme given in response to the domestic operationalisation challenge and was the substantive element of Scott et al (2014). The creation of tools to support operationalisation in the UK context may have

been helped by the TABLES project (i.e. Scott et al, 2014). However, the impact and use of the tools created by TABLES in supporting domestic-local users of the approach remains unknown. Certainly it is conceivable that the NEAT[23] project that followed-up Scott et al (2014) and TABLES may be helping in this regard.

Kidd et al (2011) noted that a lack of indicator driven data and monitoring can cause significant problems to put an ecosystem approach into practice. Indeed, Pushpam et al (2008) noted that this is partly a human capacity problem, but it is also driven by some poor and inconsistent 'ecosystem approach indicators. As noted by Jennings (2005), the requirement for terrestrial indicator regimes will change between geographies and situations and that a comprehensive suite of pressure, state, and response indicators are crucial for terrestrial ecosystem approach management.

2.8.5 Facilitation: *governance* barriers

The literature noted a number of barriers to implementation at local domestic scales which could be best categorised as being of a *governance* nature (Hirschfield, 2005; Garcia and Cochrane, 2005; Fee et al, 2011). That was, barriers of local politics (and policy) and funding. The literature sporadically discussed challenges of accessing appropriate funding to facilitate organisational change towards an ecosystem approach (Wilson, 2010; Cowan et al, 2012). Graetz et al (2006) have noted how any process of organisational change management is generally facilitated by adequate funding and resources and disabled by the lack thereof. Waylen et al (2014[B]:4) have noted how (conceptually) this should be true of transitions towards a more ecosystem-based approaches. Indeed, both Smith and Maltby (2003) and Shepard (2004) found in their empirical studies that a lack of appropriate funding was detrimental to transitions towards an ecosystem approach at local-domestic scales. As noted in Section 2.6, organisational transitions towards ecosystem approaches can be

[23] Scott et al (2014) was the tenth work package of the 2014 UK National Ecosystem Assessment Follow On. The principle aim of this work package was to support the creation and collation of tools that would facilitate the use of ecosystem services and an ecosystem approach in operation. Thus, it was predominately about macro and micro 'tools', or the facilitation aspect of the barriers to implementation (see Figure Five). The principle final output of Scott et al (2014) was the National Ecosystem Assessment Toolkit (NEAT) tree. Based upon the notion that 'the natural environment provides services which underpin economic activity and human wellbeing' then the NEAT tree 'provides users with tools and experience to build this relationship with nature into your decisions in a transparent, participatory and evidence-driven way. Not only will these lead to better outcomes, it will allow you to demonstrate that the principles of the Ecosystem Approach have been built into their work'.

complex and are necessarily long term, which in turn requires appropriate funding over a longer term. Certainly, organisational transitions towards ecosystem approaches can be facilitated by financial incentives to behavioural change (Garcia et al, 2003), though again, the design of such incentives might be challenging considering the complexity and multi-faceted nature of the ecosystem approach (Fee et al, 2011). Interestingly, Waylen et al (2015) noted how the structure and form of traditional funding streams within organisations can leave legacies (i.e. in administration and processes), which can act as cultural barriers to implementing new patterns of work.

The literature also discussed how local politics and administrative structures can act as barriers to ecosystem approaches (IEMT, 1997). Certainly, the existence of dedicated organisations and agencies with a remit to promote ecosystem approach transitions can positively affect transitions (Korn et al, 2002; Shepard, 2004). Moreover, as noted by Kidd et al (2011) and Potschin et al (2011) dedicated support packages and programmes to structure transitions over the longer term with advice, funding, tools and training have the potential to offer real and lasting value (Farmer et al, 2012; DeJonge et al, 2012). That said, a number of scholars have noted how the interdisciplinary nature of ecosystem approaches have the potential to clash at local scales with discipline-aligned public administrators (Garcia et al, 2003; Garcia and Cochrane, 2005), and especially where administrators are supported by statutory legal functions (Flitner et al, 2006).

2.8.6 Summary of the literature review: *people*, and towards a 'political science' perspective

Section 2.8 has highlighted key aspects of the literature in relation to the barriers to implementation of an ecosystem approach at domestic local-scales. The typology seen at Figure 2.4 is a synthesis of the literature (Annex C) which was comprised of 47 studies (and sources) and twenty different and discrete barriers to implementation. These sub-categories were used to construct Figure 2.4's main categories of *individuals* and *organisations*, *tools* and *governance*. Thus, the degree to which each of these four principal categories is made up of sub-categories, and different studies, can be assessed. Indeed, each 'category of barrier' was comprised of the sub-

categories of *individuals* (2) and *organisations* (5), *tools* (7) and *governance* (6). It was concluded from this literature review that a) the *people*-centric barriers were slightly more impactful, but that, b) the impact of *people* on the *implementation deficit* remained relatively under-researched in this literature (Shepard, 2008). Therefore, this thesis chose to focus its attention on the *individual* and *organisational* aspects of the domestic local-scale *implementation deficit*.

Finally, and critically, the literature review revealed how the preponderance of explanations for the *implementation deficit* of the ecosystem approach were offered from natural science, environmental science, and natural resource management perspectives. Whilst certainly these theoretical frames have offered significant value and originality in exploring and explaining the *implementation deficit*, there were few studies offering explanations from other scholarly traditions. This was considered problematic because the ecosystem approach is clearly a multi-disciplinary approach, and as the social and economic elements within the ecosystem approach should offer value in terms of offering theoretical perspectives on its *implementation deficit*. Moreover, the literature contained a broad omission of political science studies exploring this phenomena. This was particularly troubling because within political science is the sub-discipline of 'implementation studies' which is concerned with understanding and offering theoretical explanations of *implementation deficit* in general. This broad omission of political science framed studies might be considered where the ecosystem approach was not considered as 'policy' or as a 'policy-notion'. However, as shown in this Chapter the ecosystem approach was clearly intended (by the CBD) to become national-domestic 'policy' one sort or another, and indeed is a form of UK 'policy'. Thus, the broad omission of political science investigations is another clear 'gap' in the research literature. This paucity of political science-facing investigation is addressed later in Chapter Four.

2.9 *Individual* and *organisational* understandings about an ecosystem approach under *ecosystem science*

2.9.1 Revisiting *ecosystem science*

As noted in Section 2.2, there appeared to be confusion and a degree of contestation between the different policy-notions within *ecosystem science* (i.e. the ecosystem approach, ecosystem services, natural capital etc). The literature suggested that the state of *ecosystem science* might be affecting what *individuals* (and perhaps *organisations*) were understanding an ecosystem approach to be. This thesis assumed that understanding and comprehension were, in fact, important 'gateways' to implementation (as per Waylen et al's 2014 argument in Section 2.2) and that the greater the variation in understanding within any group or setting the less likely that consistent implementation of any one policy-notion was occurring. Again, this argumentation in based upon a position that agreed with Waylen et al (2014[A]) and DeLucia (2015) that the 'means' matters as well as the 'ends' in this regard. Furthermore, this thesis considered that the other side of this argument established in Section 2.2 (that the 'means' do not matter as long as the 'ends' are met) is incoherent from a political science perspective as it potentially renders policy evaluation and learning moot, where it does not give an opportunity to evaluate the effectiveness and impact of any individual policy-notion.

Critically, near all of the previous studies exploring or touching upon aspects of *ecosystem science* were predominately theoretical and not empirically grounded (except Waylen et al, 2014[A]). This was problematic, as laying claim to any clear or original understandings about how the state of *ecosystem science* was actually affecting implementation of individual policy-notion needed to be established through empirical evidence. Thus, this thesis sought to offer a greater empirically-based dimension to the discourse surrounding the nature of *ecosystem science*. Moreover, it was considered that understanding how and why the state of *ecosystem science* helped or hindered the different policy-notions that comprised it might have wider ramifications upon other similarly contested terms (e.g. sustainability). That all said, it should not be automatically assumed that the confused and contradictory state of *ecosystem science* offers only negative effects for the different terms and policy-notions that comprise it. Indeed, although this thesis had adopted a position on *ecosystem science* (that the 'means' – terminology and language was important) such an empirical investigation needed to be undertaken with an open mind to the possibility that this might not be the case. The first aspect of an empirical investigation of this

kind needed to be grounded in a specific research question, and this is addressed next in Section 2.9.2.

2.9.2 How is an ecosystem approach understood?

This thesis sought to establish empirically how the notion of an ecosystem approach was being understood by individuals and organisations within a specific setting. To undertake this, an initial research question was formulated. This question needed to accommodate the variable and different understandings that individuals and organisations might have held about an ecosystem approach and thus needed to be a broadly open-ended question. Thus, the first ancillary question that structured this thesis asked:

‘How is an ecosystem approach understood by practitioners?’

2.10 Conclusion

In conclusion, the ecosystem approach can be understood (by different scholarly traditions) as an internationally-originated *regime*, a domestic policy-notion, and a framework for integrated environmental management. Congruent with its commitment to the CBD, the UK has been attempting to implement this approach at domestic scales, through natural environment organisations and weak EPI. The literature is replete with the many challenges and barriers to its implementation at domestic scales, and an original typology of these barriers was advanced at Figure 2.4. Of these barriers, this thesis selected to focus on the *people*-centric barriers of *individual* and *organisational* scales. Moreover, it finds that the state of *ecosystem science* was likely to be playing a considerable confounding role in implementation, and so a commitment to explore this phenomena further was undertaken. These points established, the next challenge lay in identifying an appropriate geographical setting(s) in which to explore this *implementation deficit*. This challenge is addressed next, in Chapter Three.

Chapter Three: UNESCO man and biosphere programme

"The philosophy and actions associated with the ecosystem approach have many shared concerns with the biosphere reserve concept promoted by UNESCO through its Man and biosphere Programme". Kerr, 1998

3.1 UNESCO man and biosphere programme

This thesis decided to explore the *implementation deficit* of the ecosystem approach within the frame of the UNESCO MAB programme. The rationale for this choice, as well as the detail of MAB programme, and the specific location, utilised are explored in Chapter Three.

3.1.1 Introduction to man and biosphere programme

The UNESCO[24] MAB programme is piece of major global environmental governance (Flitner et al, 2006). It aims to establish the scientific basis for the improvement of relationships between man and nature (MAB, online), and reconcile conservation of biodiversity and biological resources with their sustainable use. It is an inherently multidisciplinary programme in that it attempts to integrate the natural and social sciences, economics, and education to:

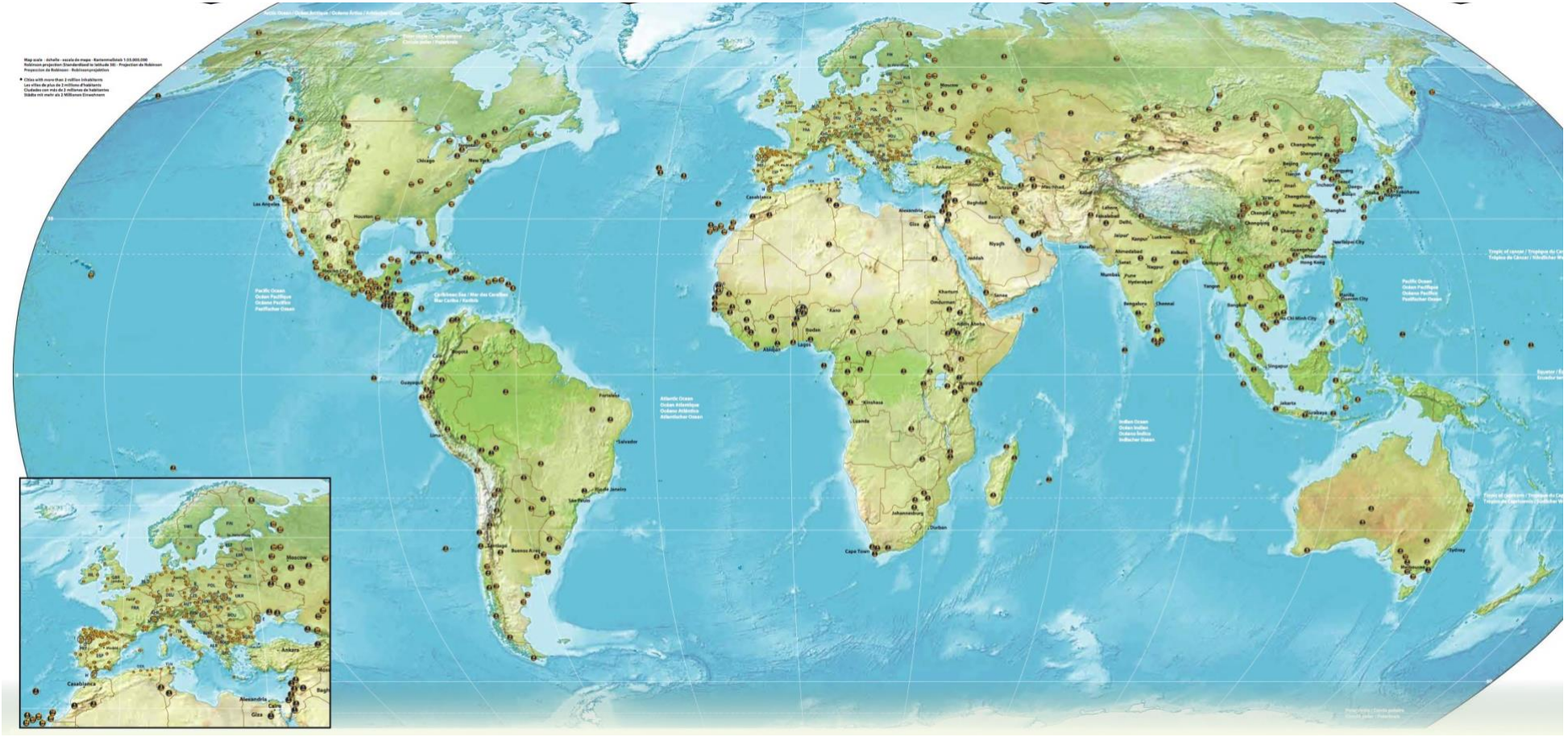
> 'Improve human livelihoods and the equitable sharing of benefits, and to safeguard natural and managed ecosystems, thus promoting innovative approaches to economic development that are socially and culturally appropriate, and environmentally sustainable'.

From 1976 onwards the MAB programme started to designate international sites that would act as geographical locations for showcasing the science underpinning

[24] The United Nations Educational, Scientific and Cultural Organisation, is an agency of the UN. It was created in 1945 with the aim of building the defenses of peace in the minds of men. UNESCO achieves its aims through five key activities and is perhaps best known for its World Heritage Programme and accompanying sites.

sustainability in practice (UKMAB, online). These sites are known as biosphere reserves. The MAB programme has now established a global network of six hundred and sixty-nine biosphere reserves in one hundred and twenty different countries that seek to fulfil its strategic aims.

Figure 3.1. Global man and biosphere programme biosphere reserve locations



Source: UNESCO, online

UNESCO (2016) describes the relationship between MAB and biosphere reserves:

> ‘In practice, the MAB Programme is implemented in biosphere reserves. They may contain terrestrial, coastal and/or marine ecosystems, which should be representative of their biogeographic region and of significance for biodiversity conservation. Each biosphere reserve promotes solutions reconciling the conservation of biodiversity with its sustainable use, towards sustainable development at the regional scale’.

As per Figure 3.1 these biosphere reserves are all connected to an international network and exchange for sharing information, best practice and personnel (the WNBR). Biosphere reserves are international sites that are selected to act as physical locations for highlighting the interconnectivity of man and nature. They were initially designed to act as sites to promote education and research of this interconnectivity, though over time they became intrinsically associated with evidencing sustainability in practice. Indeed, Batisse (1986) describes biosphere reserves as ‘living laboratories’ for the trailing of new and innovative approaches to integrated management practices. It was UNESCO’s intention for these sites to represent the full panoply of different global ecosystems, and they can therefore differ significantly in terms of their biogeography. That being said, there are fundamental structural similarities between all biosphere reserves. Each biosphere reserve has three basic functions which are complementary and mutually reinforcing (see Table 3.1). These are a ‘conservation function’, a ‘development function’, and a ‘logistics function’ (which includes research, monitoring, education and information exchange).

Table 3.1. Strategic objectives of biosphere reserves

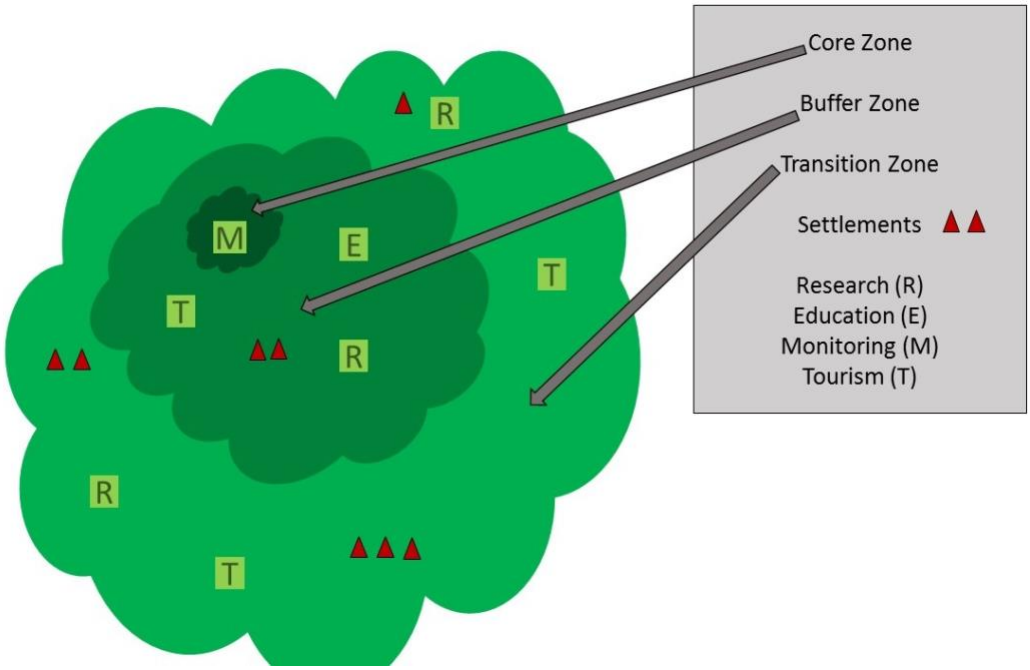
Function	Explanation
Conservation	"Biosphere reserves should help to strengthen the conservation of biological diversity, genetic resources and ecosystems".
Logistics (Inc. research and education)	"Together, biosphere reserves should constitute a well-identified international network of areas for research and monitoring directly related to MAB field activities, making the accompanying training and information exchange".
Development	"Biosphere reserves should associate environment and land and water resources development in their research, education and demonstration activities".

Source: UNESCO, 1986:72

3.1.2 Biosphere reserve structure

Beyond the three common functions seen in Table 3.1, each biosphere reserve shares a common demarcation of three interrelated zones: a core zone, a buffer zone, and a transition zone (see Figure 3.2). Whilst the zoned system illustrated in Figure 3.2 is theoretically common to all biosphere reserves, it remains flexible to real-world local geographies, existing conservation designations, socio-cultural settings, legal protection measures, and constraints.

Figure 3.2. Biosphere reserve zoned structure



Source: MAB, online

According to UNESCO, these zones are:

- The core area(s) comprises a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems, species and genetic variation.
- The buffer zone surrounds or adjoins the core areas and is used for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education.
- The transition area is the part of the reserve where the greatest activity is allowed, fostering economic and human development that is socio-culturally and ecologically sustainable.

The core zone to each biosphere reserve remains the most biodiverse element, often due to the strict protective measures placed upon them[25]. Li et al (1999) differentiates the core zone from the others due to the relative lack of people, settlements, and development; which, as Walker and Soleki (1999) highlight, can negatively affect the biodiversity of a core zone. Thus, the core zones tend to act as ecological reference

[25] Core areas often form parts of other, stricter, conservation designations such as national parks (Tangley, 1988).

points for the rest of the biosphere, and consequentially play host to small amounts of research, education, and monitoring activities (Batisse, 1986).

Around this biodiversity-rich core zone is a buffer zone. Much like the core zone, buffer zones should be supported by a national conservation or management policies (Price, 2002) and should, where possible, be ecologically or physically linked to the core to support ecological coherence (Shriar, 2001). Buffer zones in international biosphere reserves tend to have low human habitation but, due to habitation pressures, buffer zones tend to be more populous in UK biospheres (Hambrey et al, 2008). Ma et al (2008) suggests that many of the difficult decisions on how to best manage the competition and trade-offs between tourism, education, and conservation, occur in buffer zones; and Shrirar (2001) suggests that the majority of 'buffer zone trade-offs' consist of balancing and trading-off tourism versus conservation. Certainly, many tourism and educational activities are undertaken in the buffer zone in the interests of 'fostering appreciation of the biome' (UNESCO, 1974:25). Though as Mehring and Stoll-Kleemann (2000) point out, poorly balanced and managed buffer zones can lead to negative impacts such as excessive tourism-based impacts or excessive developments (based on weak governance) impacting biodiversity. Indeed, Naidoo and Ricketts (2006) again suggest that this highlights the importance of the buffer zone as the prime setting for balancing 'use and conservation' trade-offs.

Beyond the buffer zones lie the transition zone which, as Ma et al (2009) suggest, are subject to fewer legal protections. Transition zones tend to be a far larger outer ring around the biosphere reserve in which communities, businesses, and various interest groups are encouraged and supported to move towards practical expressions of sustainability (Batisse, 1986). According to Price (2002), UK biosphere reserve transition zones follow familiar patterns of landuse in that they tend to be owned by multiple private landowners (congruent to contemporary UK patterns of rural landownership, e.g. Munton, 2009). Transition zones also tend to be far more populous and, as a consequence, can be the location for many important and challenging agriculture, industry, and urbanisation trade-offs (Batisse, 1986). These can include trade-offs between agricultural production and conservation, or between creeping urbanisation and agriculture. The community-based decision-making (that

takes place in both the buffer and transition zones) is one of the key narratives that runs through the MAB programme (Edge and McAllister, 2008; Kent et al, 2012). Community and stakeholder engagement is not an addendum to the biosphere reserve concept but, congruent with its integrative social-sustainability ethos, one of the key connections linking society and environment which constitute the concept (Batisse, 1986).

Biosphere reserves are often physically nested within complex inter-relating and over-lapping national networks of conservation designations. This can often mean that biosphere reserves co-locate with other, existing, conservation designations with their own governance processes, legislative imperatives, and priorities; making management highly complex (Hambrey et al, 2008). Where biosphere reserves co-locate with contentious, or in demand resources, conflicts and challenges may arise that need to be managed and traded-off. Bavinck and Vivekanandan (2010) and Finer et al (2009) have noted how this dynamic can be especially contentious and contested in poorly managed biospheres, or those with poor governance (i.e. weak or underfunded institutions, brittle legal protections, corrupt bureaucrats etc). In such cases, contentious or unbalanced resource exploitation within biosphere reserves can damage the reserves legitimacy, brand, and ability to wield soft-power to affect influence amongst key stakeholders. Thus, based upon the high biodiversity value of core zones (as per Ma et al, 2009) biosphere reserves are often based upon existing legally constituted conservation areas before being re-designated and re-branded as UNESCO designated biosphere reserves. This gives a 'layering effect' of different levels and forms of conservation protection to the core area (statutory and non-statutory). Though this can also sometimes lead to challenges of legacy, where older conservation legislative imperatives place competing demands on the new biosphere management regime (as per Sader et al, 2001). On a macro scale, the co-location phenomena can be seen where WBRN is a global network of biospheres which reside within a complex international panoply of other conservation designations and protected areas. However, the key historic differentiating characteristic between biosphere reserves and other conservation designations is their fundamental integrative nature (based upon the three aims of conservation, sustainable development and research and monitoring).

Within the WBRN, and the common three zone structure, there is a degree variation in the form that biosphere reserves take. Many biosphere reserves are relatively autonomous and free to choose their shape and form, whereas others are relatively formal and well structured around national priorities. Hambrey et al (2008) suggest that there is no international consensus of the optimal form of biosphere governance, and that indeed this is a situation encouraged by UNESCO in the interests of 'maximising the opportunities for learning and demonstration' (1986). This is important because where there is no consensus or imperative for consistent form (beyond the three zones), then biospheres can, and indeed are, vehicles for a wide panoply of different national conservation agenda. In this way biospheres do not find a place on the normative IUCN protected area categorisation, and instead are a 'unique designation'. Illustrative of this, Hambley et al (2005) suggests that WBRN transcends traditional designations, and that biosphere reserves are in fact:

> 'The only global designation – or accreditation – for an area demonstrating excellence in sustainable development in practice'.

Thus, biosphere reserves are not similar the other traditional or conservation-orientated designations but are, instead, entirely focused on the practical realities of sustainable integrated management. Moreover, as Section 3.1.3 will discuss, the UK has a unique relationship with UNESCO, and this has played out in the UK utilising a unique iteration of MAB.

3.1.3 UK biosphere reserves

The history of the UK engagement with both UNESCO and MAB is inconsistent and has been driven by politically motivated periods of engagement and disengagement. The UK joined UNESCO in 1971 and withdrew from it between 1985-1997. This withdrawal was a coordinated political effort by the Thatcher and Regan administrations in the UK and USA respectively (as well as Singapore); and were in response to a concerted effort by the two administrations to influence changes in UNESCO. These changes were driven by what the administrations called 'uncontrolled budget increases, inefficient administration and a tendency by the

organisation to engage in extraneous political attacks on western values' (New York Times, 1984). Despite many reports and recommendations to re-join UNESCO (Berlage and Stokke, 1992:190) the UK remained outside for twelve years, before re-joining in 1997 (as did the USA and Singapore in 2007). This resumption of membership occurred under the New Labour administration (1997-2009), who it has been suggested saw quick re-engagement with UNESCO as a symbolic tool for the new administration (Times, 1997). Singh (2010) again suggests that this re-joining was undertaken as a vehicle for delivering some of the New Labour administrations sustainable development goals.

The UK's relationship with MAB is unique, and perhaps exceptional. Over the course of the MAB programme there have been eighteen sites withdrawn in seven different countries. Slightly more than half (ten of eighteen) of these withdrawn sites were in the UK (though two were withdrawn and renamed). All the original (1976) designated UK biosphere reserves were based upon existing 'national nature reserves' - the highest level of national conservation designation in the UK at the time (Price, 2002). Furthermore, the majority of current UK biosphere reserves exist in geographical landscapes that cross-over and contain many other designations such as sites of special scientific interest (SSSI), national parks, special areas of conservation and areas of outstanding natural beauty (AONB). The exceptional nature of the UK-MAB relationship is evidenced by the UK having the highest rate of disbanding national biosphere reserves any UNESO member country. This phenomena is displayed in Table 3.2 which shows that there have been sixteen biosphere sites in the UK since 1976; and there are currently six operational: two in Scotland, two in England, one in Wales and one in the Isle of Man (which is technically a UK Crown dependency).

Table 3.2 UK Man and biosphere programme locations

Biosphere Reserve	Joined MAB	Left MAB	Comments
Beinn Eighe	1976	2016	Renamed 'Wester Ross' in 2016
Braunton Burrows-North Devon	1976		Extended in 2002 and 2014
St Kilda	1976	2002	
Rum	1976	2002	
Cairnsmore of Fleet	1976	2002	
Caerlaverock	1976	2002	
Biosffer Dyfi	1976		Extended 2009
Loch Druidibeg	1976	2013	
Moorhouse Upper Teesdale	1976	2012	
North Norfolk Coast	1976	2014	
Silver Flowe Merrick Kells	1976	2002	Extended and renamed 'Galloway and Southern Ayrshire' in 2012
Taynish	1977	2010	
Galloway and Southern Ayrshire	2012		
Brighton and Lewes Downs	2014		
Isle of Man	2016		
Wester Ross	2016		

Sources: UNESCO online, and 'Deselection' from Coetzer et al, 2014* and by author+

As Table 3.2 shows, two of the UK's biosphere reserves have been renamed since inception, two have been extended, two have been merged to form an entirely new biosphere reserves, and six are currently active (in bold in Table 3.2). Those biosphere reserves which have been 'extended' have been given the mandate to do so based upon their perceived successes revealed through the periodic review process (see Price et al, 2010). Since 1976 there have been eight biospheres that have left UKMAB and WBRN, marked in Table 3.2 in *italics*. Whilst the politics of the 1980s and 1990s played a role in this (Price, 2002), the principal mechanism of these removals has been the 'MAB national periodic review process'. This review process was one of the primary outputs of the UNESCO Seville conference (1995), which had led to the creation of a new 'statutory framework' for governing all the sites within WBRN (Seville strategy). A key mechanism of this new framework was the 'national periodic review' process. This process facilitates biosphere managers, and the MAB executive, better understanding of their performance against the goal of being 'sites of excellence'. It creates a process whereby underperforming biospheres can be subject to 'measures to ensure conformity' to the WBRN statutory framework, or failing that, the removal of the UNESCO designation (Price, 2002).

The UK MAB national committee (UKMAB) oversees and applies the MAB programme in the UK. This national committee acts as a focal point for UK UNESCO MAB programme, maintaining liaison with the UK national commission for UNESCO, the MAB secretariat in Paris, EuroMAB; and, as appropriate, MAB national committees in other countries (UKMAB committee, online). This committee seeks to establish links with other UK sustainable development-orientated structures, promote the UNESCO programme in the UK, identify opportunities for UKMAB to add value to other aligned programmes. It also guides and oversees the work of all UK biosphere reserves (including managing the periodic review process). Critically, the periodic reviews of UK biospheres have been the primary driving force behind the UK's position as leader in the removal of biosphere reserves that do not meet standards. Each of the removed and expanded UK biosphere reserves has been actioned in response to the findings of the 'periodic review process'. Indeed, as argued above (and in Table 3.2), compared to other UNESCO members states the UK (UKMAB) is prolific in its use of the 'periodic

review process' for disbanding what it deems are 'underperforming' biosphere reserves. This is especially true of those biospheres which were created as 'add-on' designations to existing nature reserves (Ishwaran, 2012). It is also true of those biosphere reserves with little chance of meeting the more rigorous and monitored sustainable development agenda that Price (2002) characterises the post-Seville strategy period as being (e.g. Northeast Svalbard biosphere reserve, withdrawn 1997).

It is therefore summarised that the UK has an exceptional and unique relationship with MAB. This exceptionalism is predicated upon UKMAB's ruthless removal of 'under-performing' biosphere reserves, and the UK government's fluctuating political relationship with UNESCO. This exceptionalism also provides one of the rationales for the case selection which is now discussed in Sections 3.2 and 3.3 along with the case context and characteristics.

3.2 The ecosystem approach in biosphere reserves

3.2.1 MAB and the ecosystem approach

As noted in Section 3.1, the MAB programme has deliberatively created a global network of biosphere reserves to act as 'living laboratories' for the trialling of innovative and new approaches to integrated management practice. Moreover, the breadth of WBRN coupled to the common, but differentiated forms of the component biosphere reserves offer a special opportunity for comparative studies into the dynamics of operationalising integrated approaches to environmental management. Through their 'living laboratory' remit biosphere reserves have been at the forefront of trialling many different approaches to integrated management. This has included trials of community based management (Masozera et al, 2006; Fritz-Vietta et al, 2009), adaptive co-management (Stoll-Kleemann et al, 2010; Schultz et al, 2011), and sustainable forestry management (Flitner et al, 2006; Masozera et al, 2006; Ellis and Porter-Bolland, 2008). This also includes the ecosystem approach. The literature suggests that the ecosystem approach and MAB concepts are highly synergistic (Kerr, 1998; Korn et al, 2002:92; Hartje, 2003:22), a point evidenced in the recent research of Flitner et al (2006). This synergy is recognised by both the CBD (Decision X/32) and UNESCO (Kerr, 1998), and they benefit from a contemporary relationship based upon knowledge and best-practices sharing (CBD, online). More specifically, individual

biosphere reserves (within WBRN) have historically been identified as the preeminent locations for testing the implementation of the ecosystem approach (UNESCO, 2000). 'Solving the puzzle: the ecosystem approach and biosphere reserves' (2000) states that:

> 'Biosphere reserves act in some ways as living laboratories for testing out and demonstrating integrated management of land, water and biodiversity, which is the embodiment of the 'ecosystem approach' developed by the Convention on Biological Diversity' (UNESCO, 2000:6).

Indeed, Flitner et al (2006) suggests that the ecosystem approach is the broadest and most ambitious framework for integrated management that has been trialled, and in places operationalised within biosphere reserves. That said, Flitner et al (2006) also critically challenged the relationship between biosphere reserves and the ecosystem approach. This and the wider literature identifying challenges is addressed next, in Section 3.2.2.

3.2.2 The challenges of using an ecosystem approach within biosphere reserves

There is a limited literature addressing the ecosystem approach and biosphere reserves. This literature suggests that although they are in many ways mutually reinforcing and synergistic concepts (Smith and Maltby, 2003; Flitner et al, 2006; Scott et al, 2014), they also suffer from misalignments and challenges. Kerr (1998) considers the MAB and ecosystem approach *concepts* to be seamless. Though other scholars suggest that there are conceptual challenges with reconciling the MAB and ecosystem approach together in one geography (Flitner et al, 2006). Smith and Maltby (2003:47) found many 'reasons to be optimistic' about the connection between biosphere reserves and an ecosystem approach. Most notably, they found that where biosphere reserves demonstrate that the Malawi principles and points of guidance 'can be highly relevant to the successful operation of protected areas when stakeholder needs are met'; meaning that an ecosystem approach can be effective within biosphere reserves if a bottom-up stakeholder-centric approach to its operationalisation is adopted (as opposed to a top-down approach). Moreover,

through their analysis of the Pendjai biosphere reserve (Benin) they found that the ecosystem approach can actually act as a benefit to supporting biosphere reserves through the 'promotion of transboundary co-operation and harmonisation of development assistance'. In their analysis of the Añados del Este biosphere reserve (Uruguay) they further found (2003) strong use of adaptive management, but poor understanding of ecosystem functioning; and a poor understanding of the need for equitable sharing of resources. Similarly, Fee et el (2009:220) found that in the Schorfheide-Chorin biosphere there were problems with inclusivity of rural hunters in decision-making. Table 2.1 highlighted how decentralised management and inclusivity are important principles of an ecosystem approach, and if as Müller (2008) suggests the governing modalities of biosphere reserves impede or obstruct decentralisation, then this is clearly problematic for taking an ecosystem approach in that biosphere reserve.

The research highlighted how there has been a limited degree of research investigating the implementation of the ecosystem approach in settings such as German biosphere reserves (Flitner et al, 2006; Fee et al, 2009) and in Scandinavian biospheres (Schultz and Lundholm, 2010). Moreover, biosphere reserves featured heavily in the Pathfinder workshops of the CBD (Smith and Maltby, 2003), though critically, there is no research investigating this phenomena in individual UK or English biosphere reserves. This is a gap in the empirical research literature exploring the relationships between UKMAB and the ecosystem approach. Furthermore, considering the critical approach taken by UKMAB towards UK biosphere reserves (see Section 3.1.3) and the comprehensive response to the ecosystem approach taken by UK governance actors (Section 2.8), the omission of a UK investigation into this phenomena appears necessary and overdue. Thus, this research aims to meet this gap in the research through an original in-depth case study of an English biosphere reserve.

3.3 Case study: the North Devon UNESCO biosphere reserve

This research selected a biosphere reserve as the case study area based upon the importance of the WNBR as a location of integrated natural resource management practice; the explicit connection between the CBD ecosystem approach and MAB; and

the exceptional nature of UK - MAB relationship. The limited ecosystem approach - biosphere reserve literature highlighted how other explorations of this phenomena selected multiple biosphere reserve case studies (Smith and Maltby, 2003; Fee et al, 2009; Flitner et al, 2006). Whilst certainly multi-case research designs have significant comparative value, they do tend to offer shallower, and more peripheral investigations of the phenomena (i.e. only sampling executive management team). Instead, this thesis aimed to investigate this phenomena in depth, within a single biosphere reserve to try and uncover the 'thick' dynamics driving implementation of an ecosystem approach (congruent with Adger et al, 2011) by *organisations* and *individuals*. The selected case study area was the North Devon UNESCO biosphere reserve (hereafter the BR), which is located in England, in the 'land between the moors'.

3.3.1 The land between the moors

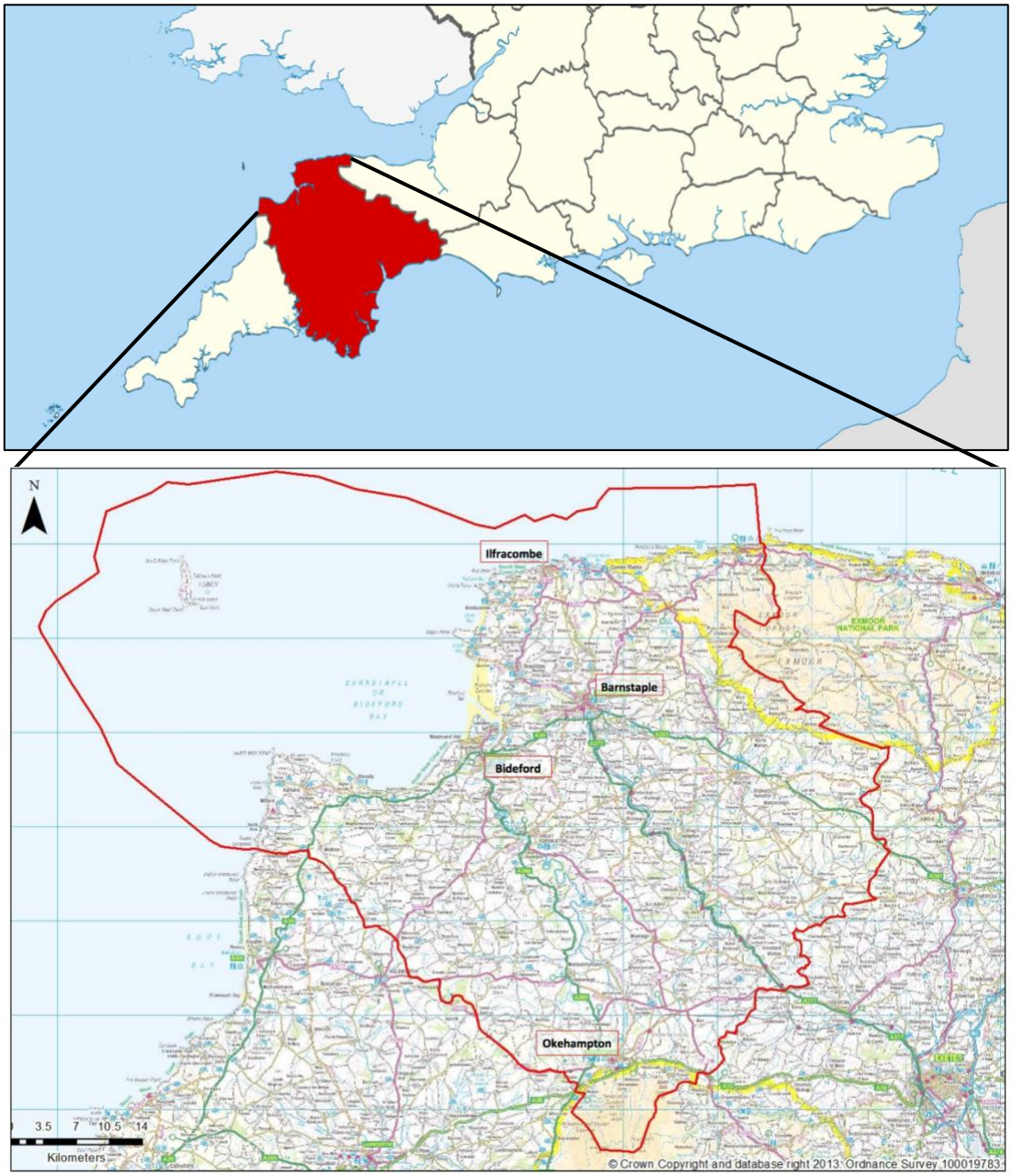
The land between the moors is a dynamic and isolated landscape in the county of Devon in the UK. It is a landscape that has been shaped decisively by millennia of agricultural landuse coupled with limited human populations. This has produced a geography of patch-worked fields, hamlets, and hedgerows where agriculture remains the main industry, with particular focus on dairying and livestock farming. The second most important industry is tourism. Indeed, the land between the moors can attract four million tourists a year, and up to sixty thousand tourists a day in August (Bridgood, 2012). There are no large cities in the land between the moors, with the larger coastal settlements of Barnstaple and Bideford home to half the total population of 155,000. This low population density once led to it being labelled the 'forgotten quarter', though as Lobley and Butler (2007:17) suggest 'that appellation is hard to justify today'. Bridgood (2012) suggests that this is due to it being increasingly well-known through the strong tourism industry and the number of people ('incomers' or 'blow-in's') choosing to permanently relocate there. That being said, despite heavy agricultural use, the land between the moors remains, in many places and ways, a wild and untamed landscape of rugged rocky coasts, wet damp pasture lands and wind-blown ridgelines. This dynamic balance between well-established agriculture and a wild, natural setting, is a key driver of both the agriculture and tourism upon which the area survives. Thus, the livelihoods of the majority of people in the land between the moors rely on the land, and the landscape.

3.3.2 Locating the North Devon UNESCO Biosphere Reserve

The Braunton Burrows North Devon Biosphere Reserve (BR) was the first of six reserves to be designated in the UK based upon existing national nature reserves (1976) (as per Table 3.2). This BR was the first 'modern'[26] biosphere to be designated in the UK (1997), and it is potentially one of the more successful within the already 'exceptional' UKMAB (as argued in Section 3.1). It is the only UK biosphere reserve to be twice allowed to extend. Indeed, the 2002 extension was thanks (in part) to its perceived adoption of an ecosystem approach (North Devon Biosphere Reserve, Periodic Review 2015:12). Bridgood (2012) suggests that this is a perception of exceptionalism (within UKMAB) which has continues contemporaneously. Moreover, in testament to the perception of the BR's exceptional status, it was recognised as an exemplar of best-practice within the WBRN at the fourth world congress of biosphere reserves (2016). As Figure 3.3 shows the BR is located on the north coast of the county of Devon in the South West of England.

[26] 'Modern' UK biospheres refers to those that were chosen to continue as biosphere reserves after careful consideration in the 1996 periodic review process to better reflect the critically consistent nature of the new biosphere concept articulated in the Seville strategy (Hambrey, 2008).

Figure 3.3. Locating the North Devon UNESCO biosphere reserve

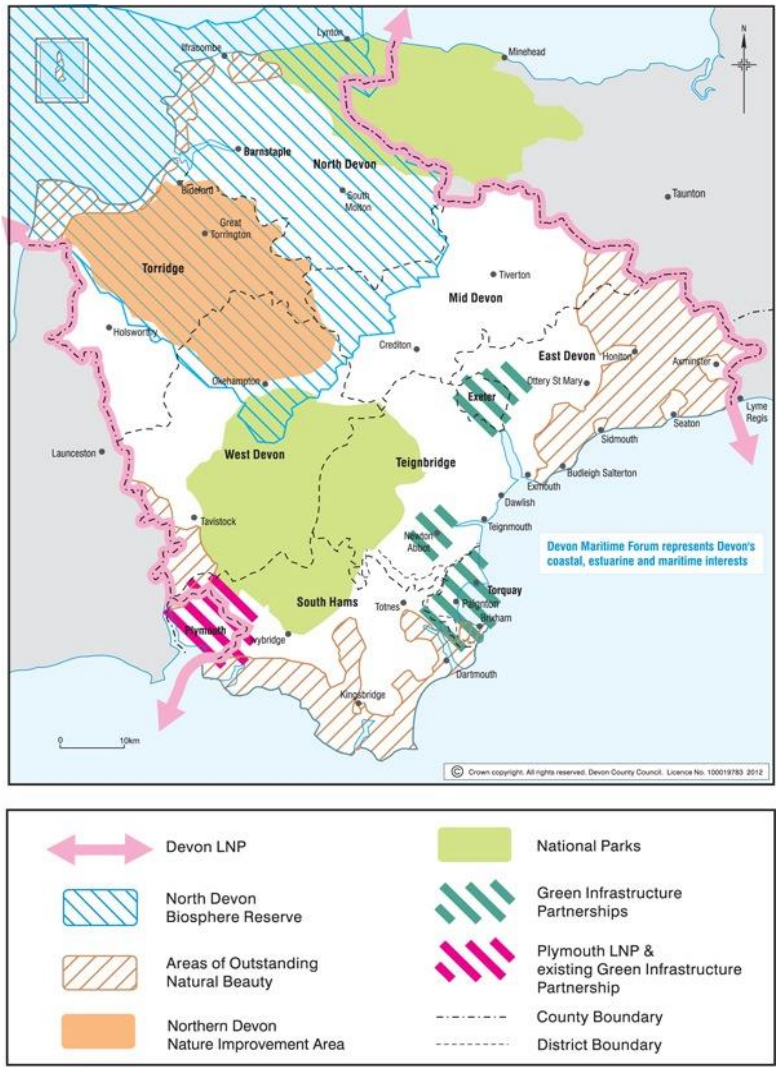


Source: North Devon UNESCO biosphere reserve online

The BR is geographically bounded on three sides by the upland moors of Exmoor, Dartmoor and Bodmin moor, and by the Atlantic Ocean on the fourth side. This landscape is drained by two major rivers, the Taw and the Torridge - whose catchments are roughly contiguous to the BR boundaries. The boundaries of this BR are roughly contiguous to other natural (riverine catchments), and socially constructed boundaries (e.g. The Natural England 'Culm Character Area' 149). This means that

management of the BR is at both landscape and catchment scales, which Hunt and Howard (2015) suggest should be to the benefit of implementing an ecosystem approach. The BR is abutted by Exmoor and Dartmoor National Park(s) which, unlike the BR, are supported through national legislation (National parks and access to countryside Act, 1949). Moreover, as Figure 3.4 displays, the wider Devonian landscape in which the BR is nested is a complex panoply of conservation designations. Brown et al (2002) have suggested this means each of the designations in Figure 3.4 enjoys varying degrees of statutory purposes leading to variable levels of funding and public/political patronage.

Figure 3.4. Map of Devon conservation designations



Source: Devon Local Nature Partnership, 2015

Figure 3.4 also shows the BR is also home to a number of other nested designations. These include the North Devon Area of Outstanding Natural Beauty (AONB) the Braunton Burrows special area of conservation the Taw Torridge estuary site of special scientific interest, the Northern Devon nature improvement area (NIA)[27]; and a host of smaller protected nature reserves (State of the biosphere reserve, 2016).

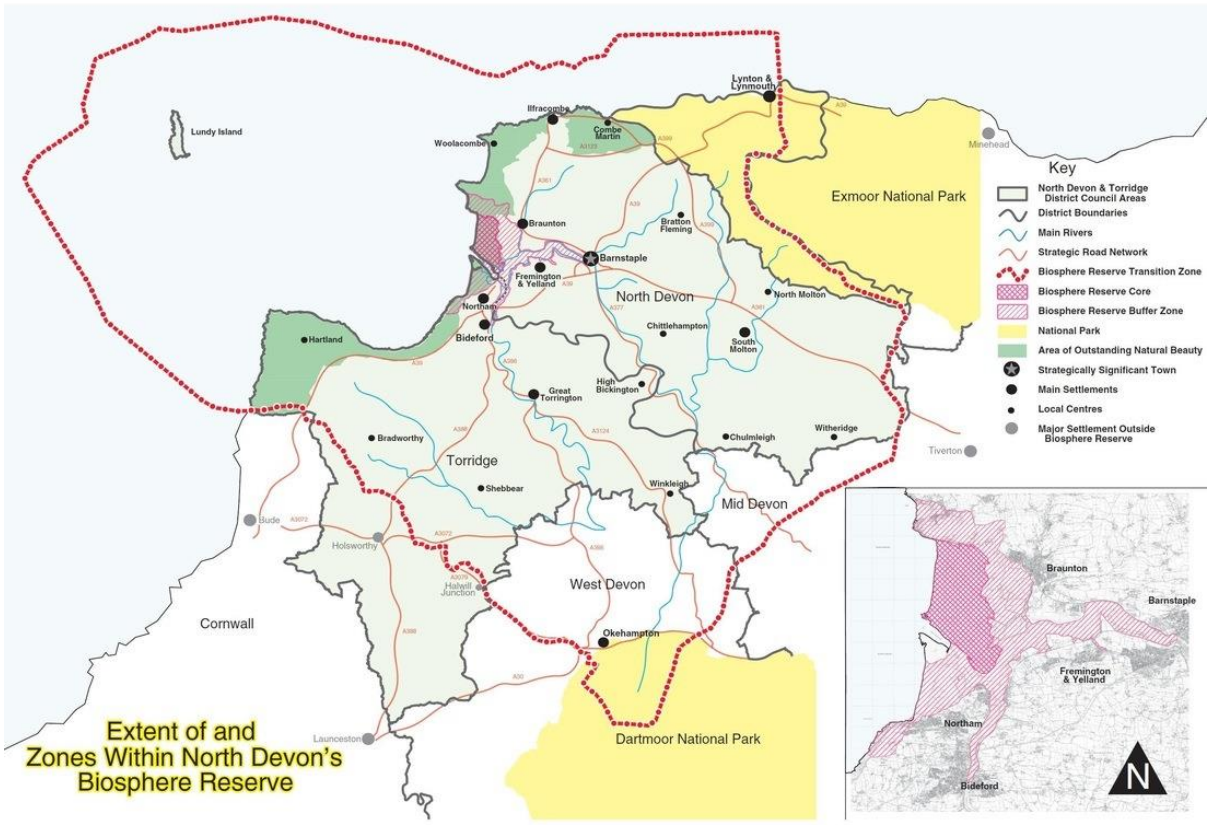
In summary, the BR's geographical nature sees it aligned with the natural catchments of the Taw and Torridge, aligned with the Natural England Culm Character Area, and Devon County Council; but misaligned with other socio-political boundaries, such as constituency and district council boundaries. This BR is nested within a landscape of other conservation designations, as well as having a number of other designations nested within itself. Finally, the BR is the only designation within this area (and indeed one of the few in the UK) which includes both terrestrial, marine, and shoreline environments.

3.3.3 Structure of the North Devon biosphere reserve

This BR was selected to be part of the MAB programme in the first round of UK designated MAB sites in 1972. Its original designation built upon the existing Braunton Burrows National nature reserve, which went to make up the new core area of the BR (as per Figure 3.2). Indeed, the Braunton Burrows national nature reserve had been a nationally recognised site of biological importance before UNESCO designated it the core area of the new BR. Congruent to all other biosphere reserves in WBRN this BR is physically delineated by a core, buffer, and transition zone (discussed in Section 3.1.2). As seen in Figure 3.5, these three zones are based upon the Braunton burrows as the core zone; the Taw-Torridge estuary (leading to the Braunton burrows) as the buffer zone; and the rural and relatively under developed outer area of the land between the moors as the transition zone.

Figure 3.5. Zones of the North Devon UNESCO biosphere reserve

[27] The Northern Devon Nature Improvement Area is discussed and referenced regularly in thesis, particularly in Chapters Six and Nine. However, the NIA is not a VSO in the traditional sense. It is instead a partnership project in its own right, nested within the wider BR. It was established to meet a number of the landscape and biodiversity restoration strategic aims of the BR, it is manned by secondees from DWT, but is led by its partnership. Thus, although members of the NIA are talked about in similar contexts to individuals from micro VSO's, the actual nature of this partnership is noted here.



Source: North Devon UNESCO biosphere reserve online

The Braunton burrows are the largest (1,333ha) sand dune system, or *psammosere*, in England. The Braunton burrows is of particular ecological importance due to the presence of a complete seral community of dune plant communities[28]. The national biological importance of the Braunton burrows has been well recognised for decades (Round, 1958; Willis et al, 1959), and it has been protected in policy and law through a range of special protective measures. Although the entire core area is privately owned by Devon Christie Estates, the Braunton Burrows' special biodiversity is protected through designation as the Braunton Burrows special area for conservation (SAC)[29] and as a National nature reserve (1996).

[28] This includes over 400 species of rare coastal flowering plants, such as Petalwort (petalwort *Petalophyllum ralfsii*) or the (British) red listed Water Germander (*Teucrium scordium*) (Beacroft et al, 2007).

[29] The Braunton Burrows special area of conservation is a site which has been selected for special conservation protection under UK and EU law. It has many Annex 1 habitats which qualify it for this special level of protection such as 'humid dune slacks' and 'fixed coastal dunes with herbaceous borders' (JNCC, online). Broadly speaking, the Braunton burrows is one of the longest virtually intact and biodiverse dune systems in the UK.

The Braunton burrows core zone is surrounded by a slightly larger (2,956ha) estuarine (1,341ha) buffer zone, comprising the estuary where the Taw and Torridge drain into the Bristol Channel. This buffer zone:

> *'*Comprises the remainder of the Taw-Torridge Estuary Site of Special Scientific Interest, Braunton Marsh and Great Field and a large section of the Areas of Outstanding Natural Beauty from Westward Ho! to Croyde, with supporting designation value from the Site of Special Scientific Interest and the Heritage Coast. Land management that is sympathetic to the conservation of the core area is promoted in this zone and there are legal policies in place to support this*'* (North Devon biosphere reserve strategy 2008-2012:5).

As suggested above, the transition zone is formed outside and encompassing of the core zone where the Taw and Torridge rivers meet and empty at an estuary. This zone is home to many important habitats (submerged mud flats, salt marsh, reed beds) and endangered species such as the European eel (*Anguilla anguilla*) which spawn in gravel beds further up the Taw and Torridge rivers. The buffer zone is protected by a SSSI designation, as well as the AONB designation; in places and is actively managed through discrete management plans (Taw Torridge estuary management plan, 2010) with a discrete management group (The Taw Torridge estuary forum).

The core and buffer zones are surrounded by a far larger transition zone, comprised of both terrestrial (229,206ha), and marine (148,397ha) elements. The marine area is a relatively new addition to the transition zone (added in 2014) and includes the Island of Lundy[30]. Apart the North Devon AONB, Lundy, a small part of Dartmoor National Park, and Dunsdon Farm National nature reserve, there are no statutory conservation designations mandating management practices within its transition zone. Consistent with Ma et al (2009) the BR transition zone is home to all the major settlements in the land between the moors (Barnstaple and Bideford). This includes a substantive majority of the population of the BR, and its development and business activities. The

[30] Lundy Island is a nationally important seabird breeding site (LundyMCZ, online) including Atlantic Puffins (*Fratercula arctica*), Manx Sheerwaters (*Puffinus puffinus*), and Razorbills (*Alca torda*). This island is subject to a significant framework of conservation protection including a SAC (2005), a SSSI (1976), a Marine conservation zone (2010), and a fishing no-take zone (2003). Moreover, it has subject to substantial conservation efforts in recent years (Lock, 2006; Appleton et al, 2006).

transition zone is predominately privately owned by archetypal small inter-generationally owned family farms and landholdings (Chiswell, 2014); with limited amount of land owned by the state (e.g. RNAS Chivenor). Critically, these individual small farm businesses (that predominate the transition zone) are not overtly directed or led by any kind of landscape scale management plan, and instead act primarily through commercial self-interest (common to UK landscapes – Munton, 2009). That said, these farms and rural businesses are predominately subject to UK and EU agri-environmental policy through the Common Agricultural Policy. This means that some farms still pursue individual farm level conservation orientated measures through (Pillar Two) inducements such as the Natural England countryside stewardship scheme. Though again, these farms and businesses are not overtly strategically managed as part of a landscape scale management plan. Certainly, the executive team leading the BR (and the NIA) have historically sought (through non-contiguous projects) to collectively pull these Pillar Two activities together into concerted programme of consistent management (NIA, 2015).Section 3.3.4 next addresses the particular governance configuration of the BR as it impacts upon the case study.

3.3.4 North Devon biosphere reserve governance

As discussed, both the BR and NIA (and others) have been attempting to marshal and co-ordinate collective efforts towards common, strategic, landscape-scale management practices across the land between the moors. However, the majority of the land in the BR is privately owned which can make such activities challenging (Swales, 2009). This is further complicated because the BR itself is not a statutory designation with any statutory purposes in UK law (as per Price, 2002), meaning it has no hard legal powers to affect or compel change amongst private landowners. Instead, what power is does have can be better characterised as ‘soft-power’ in nature (Nye, 2004: Wilson, 2008). Nye (2004) describes such soft-power approaches as ‘the second face of power’ and it ‘rests on your ability to shape the preferences of others’. Nye (2004) goes on to suggest that soft power is about attractive power, as opposed to hard coercive power.Indeed, Pahl-Wostl (2007) highlights how complex natural resource management networks and partnerships predominately tend towards such ‘soft power’ management styles. In wielding its soft power the BR attempts to act as an ‘open forum’ for discussions on how best to manage the landscape. Through being

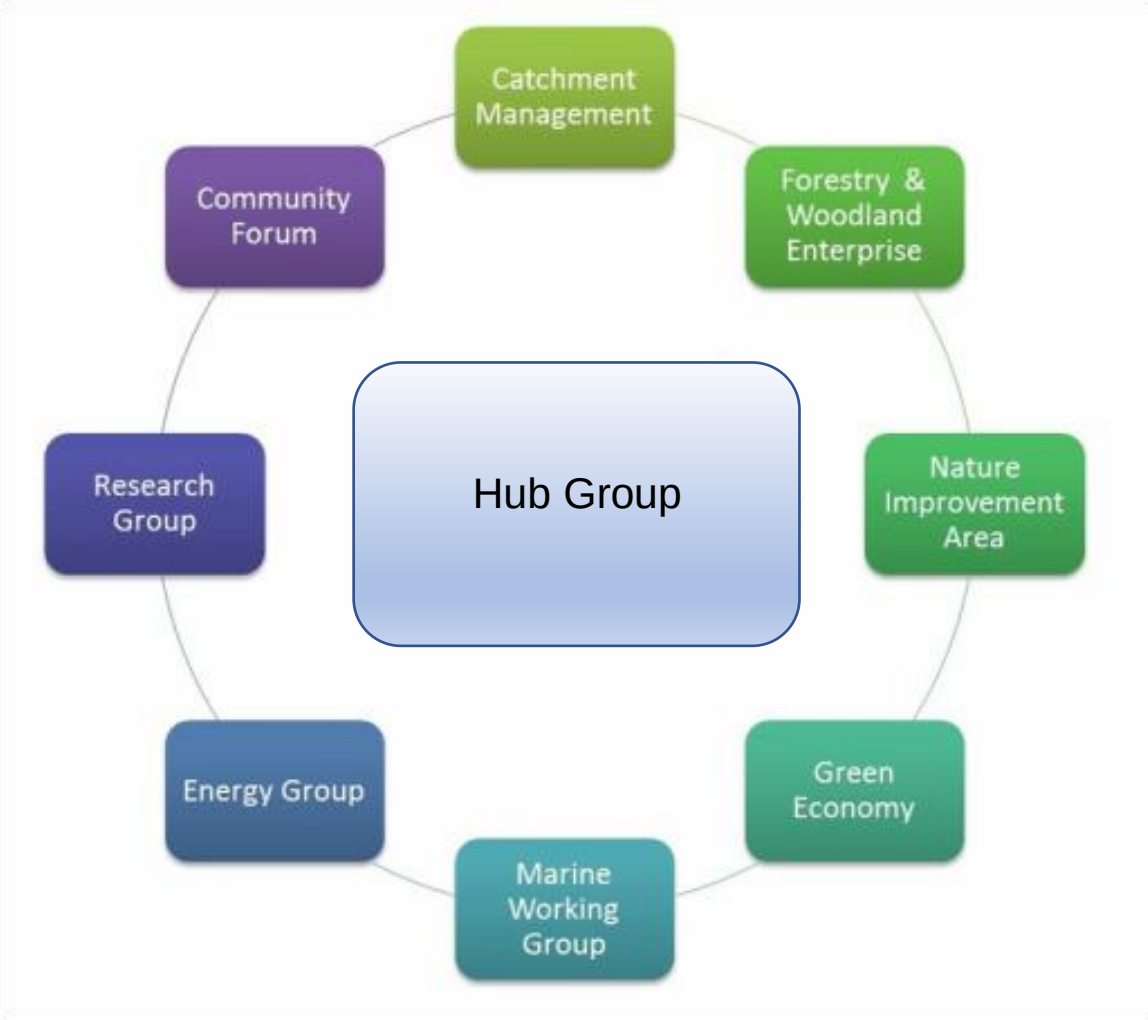
open and inclusive, the BR aims to exert soft power influences (i.e. influence, persuade, cajole, incentivise) on land managers towards common goals. However, considering the different and often competing variety of stakeholder interests that comes from a diversely owned landscape such as the land between the moors (Chiswell, 2014), balancing these different interests through soft-power towards collective strategic land management goals is difficult (NIA, 2015). That being said, the BR seeks to exert soft-power influence through its two main bodies, the BR executive team, and the BR partnership.

The BR executive team is comprised of three full time equivalent staff housed in the offices of North Devon district council in Barnstaple. This executive team has historically been funded through contributions from Devon County Council with no direct funding from national government or UNESCO. The purpose of the executive team is to ensure the delivery the biosphere reserve strategy by identifying funding, instigating projects, coordinating efforts, and seeking to structure the activities of the BR. However, at the time of conducting this research, Devon County Council's ongoing funding for the BR was undergoing a significant reduction (and eventual discontinuation - 2018) following budget cuts. This meant that during the undertaking of this research the BR executive were in the process of reimagining funding streams, job planning, and innovative new ways of funding its work (as well as contemplating the financial viability of the BR itself).

The second part of this governance structure is the biosphere reserve partnership. This partnership is a broadly normative natural resource management partnership (as per Woods, 2004; Reed et al, 2011) in that it comprised over thirty public, private, and voluntary sector organisations which work to support the strategic aims and delivery of the BR strategic plan. These organisations have adopted different 'roles' within the partnership and seek to work individually or in collaboration on individual projects to deliver the BR strategic aims. In response to the perceived funding challenges the BR partnership has recently (2016) changed its governance structure/approach towards a more agile and reflexive 'spoke and hub model'. As shown in Figure 3.6 this new model comprises inner and outer groups of partnership members. The inner 'hub-group' is now a smaller (*n*=8) team which represents the interests of all partners

through its strategic leadership. This ‘hub-group’ is supported by eight ‘spoke-groups’ (see Figure 3.6 for the spoke categories) which represent each of the strategic interest areas of the BR. These ‘spoke-groups’ are populated by interested individuals from the partnership and undertake activities within their area of interest to fulfil that element of the BR strategic plan.

Figure 3.6. Biosphere reserve 'spoke and hub' governance structure



Source: North Devon UNESCO biosphere online and author

There is a significant business administration literature outlining the benefits of ‘spoke-and-hub’ governance architectures (Agosta, 2005). These benefits are seen to extend to natural resource management settings (Vodden, 2014), and some see them as an indicative sign organisational maturity (Terpening, 2016). In the case of the BR, the ‘spoke and hub’ governance structure should be allowing for individual partnership

members to align with one or more particular group that fits their interest and professional experience. It was imagined (by the BR executive and partnership) that this reformed governance model would allow for more efficient and effective thematic decision-making. It was imagined that it would offer the dual benefits of facilitating greater institutional agility in assigning actions and individuals to specific opportunities and challenges; as well as driving efficiencies and cost savings to the BR executive.

3.3.5 The BR case selection

Selecting case studies can be a fraught process (Yin, 1981). This research was investigating a 'particular social phenomena' (*implementation deficit* of an ecosystem approach) and so exploring the phenomena within a single case that was purposively sampled for this purpose offered the potential for rich qualitative understandings about the phenomena (Yin, 2013; Palinkas et al, 2015). Certainly, the purposive selection of a single case that was geographically proximate to the researcher played a role in this case selection; though as noted by Seawright and Gerring (2008:295) 'case study scholars continue to lean primarily on pragmatic considerations such as time, money, expertise, and access' in deciding case selection. That said, the purposive selection of this particular case was conducted through an underlying academic rigour that transcended mere opportunism or convenience. The BR was initially established to be a potentially 'information-rich case' (Palinkas et al, 2015) with a substantial number of *individuals* and *organisations* which might act as research participants. This rich seam of potential participants offered the potential to fulfil the desired 'thick' exploration of the social phenomena. However, despite the potential for the BR to offer many potential *individuals* and *organisations* towards a thick investigation this was considered not significant in classifying it an exceptional case study amongst UKMAB. Indeed, the BR was initially characterised as being broadly typical of the wider UKMAB network in that it operated under a similar governance framework (e.g. funding, regulation). Therefore, at the outset, it was considered not an exceptional case but a typical case within UKMAB which, as noted by Flyvberg (2006) might support the generalisability of any conclusions drawn from the findings (within UKMAB at least). Sections 3.2 to 3.3 have highlighted the rationale for utilising MAB and the selected BR as the case study for this thesis. That said, the MAB programme and biosphere reserves attract both conceptual and practical critique that might detriment their

selection for evaluating implementation of aspects of an ecosystem approach. These critique are addressed next in Section 3.4.

3.4 Critique of the man and biosphere programme

The MAB programme and concept had been substantively critiqued in the literature. Many of these critique stem from where MAB explicitly seeks to manage the complex interactions, conflicts, and trade-offs inherent from operationalising integrated management. Other critiques are based around from the variable configurations governance, legal, and political support offered to biosphere reserves. Overarchingly, Price (2002) comments on the *implementation deficit* between the aspirations, and delivery, of the MAB aims within individual biosphere reserves. This *deficit* is well recognised by MAB and UNESCO. Therefore MAB have sought to close the gap between aspiration and delivery through the greater use of standardisation, strategic delivery plans, monitoring and oversight, and enforcement introduced in the 'WBRN statutory framework' (in the Seville Strategy).

Biosphere reserves often have to weigh, manage, and have an opinion on the trade-offs between competing or conflicting activities and interests within their geography. The trade-off most cited in research is between balancing physical development pressures and biodiversity protection. Certainly, statutory conservation designations can offer weight and legitimacy to the 'conservationist arguments' in core areas (Batisse, 1982:105). However, as Price (2002:3.1) points out, these arguments have less power in discussions about development in non-statutorily protected buffer and transition zones. Indeed, Brady et al (2009) found that successful developments in the unprotected transition zones can become self-propagating due to the protections offered in the core zone. Similarly, Ma et al (1998) found that this dynamic can be further exacerbated where there are weak planning systems and/or communities which get real, tangible, benefits from the developments that they otherwise would not have received. Fu et al (2004) went further to suggest that such development activities in the transition zone can incrementally erode the biodiversity there, forcing species richness back towards the core zone. Therefore the challenge for biosphere reserve

managers is to understand these pressures, wield soft powers in the non-statutorily protected zones, and manage the development trade-offs.

The degree and form of power to affect behavioural change is of course an important dynamic of biosphere reserves and critiquing biosphere reserve managers for poorly managing trade-offs is predicated upon them actually having any power to influence activities and affect change. The existing 'biosphere reserve literature' suggests that mangers and executive teams operate under highly variable statutory legal standings, leading to variable levels and forms of power (Elbakidze et al, 2013; Coetzer et al, 2014; Kumari, 2015). Within UKMAB biosphere reserve managers and executives have never enjoyed statutory or hard powers to influence trade-offs and affect change. Instead they have had to learn and employ a range of inclusive and participatory soft power approaches. The 'biosphere reserve literature' offers mixed opinions on whether this reliance of soft power approaches substantively advantages or disadvantages biosphere reserves (Elbakidze et al, 2013). On face value soft power approaches lie at the heart of the UNESCO project-ethos (Bokova, 2017), though reliance on soft power alone might also detriment individual biosphere reserve's abilities for mandating or coercing change (Stoll-Kleemann et al, 2006). Though of course, soft power approaches can still to affect change (Nye, 2004) in MAB settings (Nikolayevich-Sayamov, 2013). Reliance on soft power approaches (i.e. lacking statutory purposes at national-scales) might also detriment individual biosphere reserve's abilities to attract public funding and political patronage (Brown et al, 2002). However, having to rely of soft power approaches may also be acting as forces driving biosphere reserves to be more open, inclusive, collegiate and innovative (Nikolayevich-Sayamov, 2013).

The lack of hard power that many biosphere reserves operate under also negatively affects their brand identification. This brand mis-recognition can include being ignored by tourists, especially when they are close to other larger conservation designations (Nolte 2004; Reinius and Fredman, 2007). Matysek et al (2006) points out how this can also mean being ignored by local bureaucrats, especially where the biosphere reserve is competing for scare funding resources. Critically, this brand mis-identity can be exacerbated and damaged by excessive physical development leading to

biodiversity impacts within the biosphere reserve. Whilst these brand issues may diminish with time (as the brand matures in concept and public awareness), Coetzer et al (2014:96) suggests many shorter-term solutions for biosphere managers seeking to raise brand awareness.

Biosphere reserves can also struggle with gaining political buy-in, though again this varies significantly across MAB regions and governance models (Coetzer et al, 2014). Due to the MAB programme being under the complete ownership of national governments which rarely enact discrete biosphere legislation, they can be reliant on political patronage from multilevel national governance actors and agencies. Brown et al (2002) highlight how without political support and buy-in individual biosphere reserves can face significant challenges. Certainly, the 'sustainable development' ethos of biosphere reserves is (potentially) more socially inclusive than many older conservation designations which might be a political attractor. Singh (2010) suggests that this social inclusivity aspect of biosphere reserves may be an attractor for certain political actors with socially-constructed aspirations for conservation, such as the New Labour administrations in the UK (1997-2010). Thus, the predominantly weak position of most biosphere reserves in national legislation (Elbakidze et al, 2013) mean that they often have to proactively seek political patronage to buttress their precarious funding, and power positions.

Engaging local communities and stakeholders in integrated management practice can be a challenging (Reed et al, 2009). The 'biosphere reserve research literature' highlights how their processes and outcomes for effectively engaging appropriate stakeholders in biosphere governance is sometimes poor (Stoll-Kleemann et al, 2010; Schliep and Stoll-Kleemann, 2010). As Ericson (2006) argues the community based participatory measures championed in biosphere reserves can often, despite their good intentions, end up acting as barriers to integrated management. It has been suggested that participatory approaches to biosphere management can be characterised as 'good' insofar as 'experts' are engaged in the process; but that participatory approaches might be considered as being broadly 'poor' when predominately comprised of 'non-expert' community stakeholders (Schultz et al, 2011). This notion is, of course, quite challenging to the MAB sustainability and

subsidiarity ethos (Bokova, 2017). Though adopting an 'exclusive approach' to stakeholder engagement in governance and decision-making (as opposed to an inclusive approach) can mean that when trade-offs are not well (or delicately) handled, they can lead to disillusionment with the MAB concept (as seen in Garmendia and Pascual, 2013:174-176). Finally, it should be noted the entire notion of integrated management can be problematic for biosphere reserves where the designation itself can tend to act as 'population attractors' (Coetzer et al, 2014). This can negatively exacerbate landscape and housing pressures and diminish authentic local voices in integrated participatory decision-making.

3.5 Conclusion to UNESCO biosphere reserves

Chapter Three has sought to highlight why the WNBR is an important contributor to knowledge about the operationalisation of integrated natural resource management approaches. It has shown that there is an established relationship between UNESCO and the CBD, which partly hinges upon an expectation that the biosphere reserves within WNBR will act as locations for testing and implementing ecosystem approaches in practice. However, what little research there is on this subject does not include any 'thick' explorations of UK or English biosphere reserves. This gap in the research literature leads to the second ancillary question of this thesis:

'How is an ecosystem approach being implemented in the North Devon UNESCO biosphere reserve'

There are now two ancillary questions supporting the overarching title of this thesis. These questions ask what the ecosystem approach is taken to mean, and how is it being used within the case study BR. Chapter Three also discovered that the existing canon of (biosphere reserve - ecosystem approach) literature offers little to explore or understand the *implementation deficit* of aspects of ecosystem approaches with in WNBR. Critically, no studies appeared to explore this subject (within WNBR) by accessing the political science literature and theory. When this paucity of political science research is coupled to the lack of political science explanations for the general *implementation deficit* of the ecosystem approach (articulated in Section 2.9), it leads to a clear imperative for exploring and potentially utilising the political science tradition

to explore what might be driving this *implementation deficit*. Therefore, Chapter Four undertakes an exploration of the political science tradition to see if policy implementation theory can offer any understandings that might explain or frame the particular dynamics of the ecosystem approach *implementation deficit*.

Chapter Four: Street level theoretical frame

‘In recent years political scientists have been particularly concerned with finding viable means of measuring the impact of government on people. One of the most important and least studied areas relating to this concern is the problematic ‘place’ in the political system where government meets people - the point of interaction between ‘clients’ and government officials who deal with them in the regular course of their jobs.’ (Lipsky, 1969:1).

4.1 Introduction to Chapter Four

The results of the literature review seen at the conclusion of Chapter Two highlighted the paucity of ‘thick’ analysis of the *implementation deficit* of ecosystem approaches in single case study locations. The literature review suggested the need to focus on *people* (*individuals* and *organisations*) as the units of analyses, as well as the paucity of political science framed analysis of this *implementation deficit*. This was surprising because political science has a long and rich tradition of understandings about policy implementation problems. Therefore, for a thicker and richer understanding of the *implementation deficit* of the ecosystem approach these political science approaches were used in this thesis. Moreover, those few studies which have explored the implementation of the ecosystem approach within European biosphere reserves (Fee et al, 2009; Flitner et al, 2006) have done so through inductive approaches, which have sought to build new hypotheses and theory about the *implementation deficit*. Certainly these inductive approaches have historically been both necessary and fruitful. That said, the combination of the paucity of political science explorations of the *implementation deficit*, coupled to rich theoretical canon of policy implementation theory, lends instead towards an iterative approach in this case. This means that (based upon the key dynamics already established) an existing theory from the political science tradition may offer value in framing and explaining the *implementation deficit* of the ecosystem approach at local domestic scales.

4.2 Political science studies of policy implementation

The sub-field of policy implementation theory is part of the broader field of political science. The policy implementation analysis is primarily concerned with offering theory that explains the dynamics of policy implementation. 'Policy implementation' is the process of turning policy prescriptions into policy outcomes (Parsons, 1995), and as DeLeon and DeLeon (2002) suggest, there have been three 'generations' of policy implementation theory. The first generation of theory were concerned with exploratory studies focusing on top-down command and control explanations of the implementation process. In contrast to these top-down approaches, the second generation offered a number of bottom-up and networked explanations (DeLeon and DeLeon, 2002). Finally, the third generation offered more hybrid, mixed, and market-based theory of implementation (Goggin et al, 1990; O'Toole, 1990; Matland, 1995; Vancoppenolle et al, 2015). Thus, policy implementation can be seen through three distinct generations of thought: top-down, bottom-up, and mixed/market-based. Each of these three generations of policy implementation are explored so that the theoretical framing that best fits the ecosystem approach *implementation deficit* can be identified.

As part of the implementation process, policies are *delivered* to their intended users by different instruments (as per Section 2.7). As already noted, environmental policies tend to be delivered through mixes of different instruments (see Parsons, 1995; OECD, 2007; Weber and Driessen, 2012), which lead to mixed policy delivery configurations (UNEP, 2004:19). As section 2.6 highlighted, the ecosystem approach is being *delivered* domestically in England through non-statutory 'knowledge dissemination' (or 'informational') EPI which, as noted by Connelley et al (2012:194-197) and others (Tews et al, 2002; Jordan et al, 2003; Huppes and Simonis, 2009) should be considered as the weakest type of EPI. Certainty all policy is delivered and implemented within pre-existing legal, economic, and political institutional settings, meaning they are rarely developed in isolation, and instead are subject to existing and historic contexts (Sinkule and Ortolano, 1995:12). However, as shown by the example of Natural Resources Wales (Kirsop-Taylor, 2018[A]; Kirsop-Taylor et al, 2018), the ecosystem approach is not necessarily naturalistically 'fated' to be delivered by weak knowledge dissemination EPI. The case of NRW shows how it should not be assumed

that complex systems-facing policy-notions have to be delivered by weak EPI. Instead, new projects are showing how increasingly complex systems-facing policy-notions might be considered for delivery by stronger EPI as policy maker confidence around the application of complex instrument selection increases (Ingold, 2018).

4.2.1 Top-down policy implementation

The first broadly described approach to policy implementation theory suggests that policies need to be driven from the top-down by policy elites, and strong policy instruments. This top-down school of thought originated in the early 1970s (Derthick, 1972; Dunsire, 1978; Gunn, 1978; Hood, 1989; Mazimanian and Sabatier, 1989) and represented a first response to the perception of the failure of traditional implementation approaches (Pressman and Wildavsky, 1973). The top-down 'ideal' often describes implementation through processes which are purposeful, rational and linear. They tend to describe processes that only function correctly when strictly controlled by policy elites through clear and well-enforced structures of hierarchy, communication and obedience. The top-down mode is predicated upon an idealised view of the civic landscape in which politicians are nothing more than the extended will of the people, and that the bureaucrats under them unerringly follow the will of their political masters.

Carter (2007:181) is keen to emphasises how top-down theories have a long history of offering explanations about the implementation of environmental policy. This history stems from the thinking that many environmental problems are complex and urgent, and therefore require 'strong' policy responses by policy makers (Hardin, 1966). This logic calls for strong, simple, and robust policy instruments to compel behavioural change, such as eco-taxes and regulation (Jordan, 2003). UNEP (2004:19-21) highlight how such top-down approaches have historically been selected to address urgent, high visibility, high impact environmental policy imperatives.

As argued in Section 2.7, the ecosystem approach is being delivered in England through a broad programme of various activities that can be best described as 'knowledge dissemination' instruments (as per Connelley et al, 2012). There was no evidence found of command-and-control style approaches or instruments being used

to deliver or implement an ecosystem approach in England. Although, top-down approaches may offer a broadly normative approach to the implementation of urgent and complex environmental policies (Carter, 2007), in the case of the ecosystem approach in England they were not being utilised.

As established in Section 2.9 this research focused on the *individual* and *organisational* units of analysis at a local-scale setting comprised of a large number of potential stakeholders. This meant that this research was trying to understand the 'thick' explanation of the *implementation deficit* on the ground, broadly removed from the overt interests and influences of top-down policy-makers. Therefore, top-down approaches for framing this *implementation deficit* in English contexts was deemed inappropriate, and other theoretical approaches were investigated.

4.2.2 Mixed and market-based policy implementation

A second broad approach to policy implementation theory concerns mixes of top-down and bottom-up approaches (addressed below in Section 4.2.3) and market based approaches to policy implementation. Indeed, as Gomez-Baggethun et al (2009) have highlighted, policies which impel behavioural change through market based forces are gaining traction with policy-makers due to the perception that 'traditional' implementation approaches have failed to address environmental degradation. Market based policy implementation is based on the notion that market forces can offer the best drivers for human behaviour, and so designing policies to be implemented according to market-logic offer the greatest chance of success. Market based policy instruments include permittable trading allowances, tradable emissions permits, or transferable development rights (Stavins, 1998). Individual elements of the ecosystem approach (i.e. individual Malawi principles) are already being delivered through market based instruments. For example, accounting for ecosystem services (Principle Five) in payment for ecosystem services (Wunder, 2007); or accounting for appropriate scales (Principle Seven), such as in biodiversity offsetting schemes (Kirsop-Taylor, 2015)[31]. However, the ecosystem approach as a discrete and unified

[31] Biodiversity offsetting is the practice of trying to offset any biodiversity impacts from development activities by enhancing biodiversity of another site. By following a hierarchical mitigation structure (see Maron et al, 2015) his somewhat controversial policy-practice, conservation-development instrument

policy-notion comprised of multiple principles is not being delivered anywhere through market based policy instruments. Stavins (1998:2) explains how market based policy implementation can be highly effective if focusing on single issue problems. It is therefore not surprising that the ecosystem approach is not being delivered by a single market based instrument considering that it is, in fact, a combination of twelve different principles of best practice. That is not to suggest that market based theory cannot offer explanations and EPI for complex problems (see UNEP, 2004:22), but it is contended that they are less effective for multi-disciplinary policies, such as the ecosystem approach. This thesis could find no evidence of the ecosystem approach (as a unified concept) being implemented through market based approaches. Moreover, it appeared unlikely that existing market based policy implementation theories would be able to offer explanations for understanding the *implementation deficit.* Therefore, market based theoretical approaches were deemed inappropriate for offering understandings about this *implementation deficit*.

4.2.3 Bottom-up policy implementation

A third broad approach to policy implementation suggests that, where the pressure to implement a policy is not pushed from the top-down by policy elites, then it is driven by the decisions and actions of its users, from the bottom-up. There are many theories which explore and seek to explain the general phenomena of bottom-up implementation (e.g. Hjern and Hull, 1982). This includes theories such as backwards mapping (Elmore, 1980), the policy-action method (Barrett and Fudge, 1981), policy networks[32] (Marsh and Rhodes, 1992), or advocacy coalitions (Jenkins Smith and Sabatier, 1994) amongst others. In the bottom-up 'generation' of implementation, the power to affect policy outcomes lies with the final deliverers of the policy, at the end of what Pressman and Wildavsky (1973) termed the 'implementation chain'. In using this 'implementation chain' analogy Pressman and Wildavsky (1973) suggested that the more bodies (or links in a chain) a policy passes through on its way to its intended

conceptually facilitates the idea of zero-net loss of biodiversity from any development activity. Biodiversity offsetting is a controversial natural capital-style instrument (Bull et al, 2013) that attracts significant critique (summarised in Kirsop-Taylor, 2015). That said, it continues to be a popular instrument, growing in use around the world (Maron, 2015), including in England.

[32] Within the bottom up second generation of implementation 'policy networks' can be further defined on a spectrum from tight, elite convened and controlled *iron triangles* (Ripley and Franklin, 1981) through to ephemeral and loosely coordinated *issue networks* (Hecklo, 1978). This spectrum of policy network types is well described in Marsh and Rhodes (1992).

audience, the less likely it is to be implemented. Bottom-up implementation theorists have suggested those individuals at the end of the 'implementation chain' are the critical link for deciding implementation. Figure 2.2 in Chapter Two highlighted how the ecosystem approach, as policy-notion, has percolated through at least three different multi-level, hierarchical scales of governance on the path to its final users at the local-domestic scale. Therefore, the bottom-up theorists would conclude that the locus of final power over implementation of an ecosystem approach lay with those *people* at the domestic-local scale. Moreover, bottom-up theorists might conclude that the ecosystem approach's likelihood of implementation at this final local scale has been 'reduced' due to the number of different scales of governance it has had to percolate (and be transposed) through (Pressman and Wildavsky, 1973). These conclusions are congruent with the choice of *people* as the critical unit of analysis (Section 2.9), as they are the final users at the end of the 'policy chain' seeking to operationalise an ecosystem approach. Thus, the bottom-up policy implementation tradition appeared to have utility for offering explanations in this case.

4.2.4 Rationale for street level bureaucracy

Based upon the key dynamics of this *implementation deficit* it was decided that the street level bureaucracy (SLB) theory of Lipsky (1980) from the bottom-up approaches to policy implementation theory offered the most appropriate 'fit' for this problem. This was decided because SLT offers a theoretical framework for understanding the partial decisions and responses to a particular policy (or policy-notion) by the final users of policy in their application of the policy. Certainly, bottom-up approaches to implementation theory contain a number of potential theories (Sevä, 2015) that might have suited the requirements of this thesis. However, when viewed through the prism of the key dynamics of this *implementation deficit* a lot of the bottom-up approaches seem less relevant than the SLT approach. For example, the interpretative nature of the ecosystem approach (argued in Section 2.5) meant that implementation was unlikely to be contingent upon 'negotiation', 'discourse', or 'power' between policy makers and final implementers (or other members of the environmental management policy subsystem). This meant that number of theories which relied upon these dynamics could be discounted, such as 'principle-agent theory' (e.g. Saar and Sharon, 2016), and 'policy-action continuum' approaches (e.g. Barrett and Fudge, 1981).

4.3 Classical street level theory

Political science is fundamentally the study of where power resides and how it is exercised. Under this conceptualisation SLT is primarily concerned with where the 'power over policy implementation' resides. In answer to this question it concludes that the power over implementation, to various degrees, resides with the final implementers of the policy on the ground, or at the street level.

Street level bureaucracy was a term first coined by the political scientist Michael Lipsky. Following a series of papers investigating the dynamics of policy implementation amongst stressed and overworked public bureaucrats in California in the late 1960's and 1970's Michael Lipsky (Lipsky, 1969; 1976) articulated a new theory to explain how these bureaucrats were implementing national policy imperatives. This theory was presented to the wider public in a book – 'dilemmas of the individual in public service' (1978) (now in its 13th (30th anniversary) edition, 2010). Street level bureaucracy is a theory with enduring appeal and which remains perhaps one of the most powerful bottom-up theories of bottom-up policy implementation (Parsons, 1995; Hill and Hupe, 2002; Hupe et al*,* 2015). Despite being a construct of the public administration culture of the late 1970s, SLT has adapted to the vagaries of the changing public policy landscape under the new public management[33] agenda (Smith and Lipsky, 1996). Indeed, SLT remains as relevant, and dynamic today as in its first iteration (Kim, 2013; Sevä and Jagers, 2013). This theory's ability to stay relevant to the changing nature of public bureaucracy is testimony to its incisive view on the fundamental and enduring nature of relationships between policy makers and policy implementers.

Classical street level bureaucracy suggests that (in normative bureaucracies) bureaucrats implementing government policies encounter a paradoxical dilemma which often leads to policies being implemented differently to the aims of policy-

[33] The aim of the new public management agenda was to render the public sector open to more efficient private sector business and economics-orientated practices. Based upon 'management' changes and 'marketisation', new public management arguably precipitated a change in public bureaucracies from Weberian notions of *government* to *governance*. Indeed, the logic of new public management suggests normative positions on the wasteful and inefficient natures of public sectors, and suggests that instead private sector working practices lead to greater efficiency, accountability, and effectiveness.

makers. These normative bureaucracies (akin to Max Weber's interpretation of 'the public bureaucracy') are fundamentally dependent upon professional bureaucrats interfacing with the public. In these encounters, public bureaucrats enjoy a degree of autonomy to make discretionary decisions about how they deliver their government service (or 'policy output') to individual members of the public. In the interests of making policies communicable and comprehensible, many policies designed by elites are only articulated in broad or incomplete fashions. This means there is a degree of onus on the final users/implementers of the policy to translate the policy (policy output) into practice (policy outcome). These translated forms of policy can disconnect with the consumers of policy (i.e. the public/citizens) who expect and require that these policies take account of their personal, individual situations. This disconnect is played out through the bureaucrats whose job dictates that they have to deliver government policies, but yet face pressure to offer personalised services to members of the public. These two demands on their time and ingenuity are often mismatched, and so the bureaucrat has to develop methods and forms of coping[34] and continuing to deliver the service and the policy. Lipsky describes it (2010:xii):

> 'On the one hand, the work (of implementing public policy) is often highly scripted to achieve policy objectives that have their origins in the political process. On the other hand, the work requires improvisation and responsiveness to the individual case'.

This is challenging for bureaucrats, as policy makers and managers want their policies delivered in a very particular way to achieve the desired policy outcomes. However, at the same time, the public demands from these final implementers of policy a degree of flexibility to take account of their unique situation. Thus, at the 'coalface' of final policy implementation between implementers and the public there often cannot be any perfectly consistent decisions and outcomes (Alden, 2015). In attempting to navigate this paradox, bureaucrats tend to make imperfect, compromised decisions that result in a policy outcome being different to its intended form. In this way, Lipsky

[34] This use of 'coping' suggests that it is a negative experience, whereas Nielson, (2006) has suggested the opposite. Neilson hypothesises that, in fact, SLB can develop 'coping' mechanisms as a way of gaining enjoyment from their work by feeling that they are acting independently and making personalised decisions.

hypothesised that ‘whatever final policy was, it was being decided by the final implementers of it’, with the bureaucrats at street level acting as the ‘ultimate policymakers’ (Maynard-Moody and Portillo, 2010). Conversely, policy elites (and top-down theorists) conceptually imagine power residing at the top of the hierarchy, and conceptualise street level bureaucrats as inconsequential ‘policy takers and not policy makers’ (Vedung, 2015). However, Lipsky argues the opposite - that SLB have real and tangible power and that, in fact, ‘street level bureaucrats make policy’ (2010:13). Lipsky stipulates three critical (necessary) conditionalities that facilitate the manifestation of street level behaviours. These are an initial degree of autonomy, the discretion to make personal decisions, and other conditions of work under which the SLB operate. These conditionalities and behaviours are discussed in Sections 4.3.1 to 4.4.3.

4.3.1 Autonomy

Autonomy is the freedom to act independently. SLB necessarily have to operate with a degree of autonomy due to the complexity of the roles in which they operate. Despite the increasing measures of quality assurance imposed by new public management, there is often no rulebook answer for every situation, and so a degree of autonomy is fundamental to the work of professionalised SLB. Moreover, contemporary research highlights the ‘gateway’ nature of autonomy as a prerequisite for discretion (Evans and Harris, 2004; Sevä, 2015; Vedung, 2015) and the importance of professionalism driving autonomy (Lima and D’Ascezi, 2017). Thus, autonomy is the more important conditionality for revealing street level behaviours (Vedung, 2015); and so testing for autonomy was an element of focus for the empirical aspects of this research.

4.3.2 Discretion

Based upon Evans and Harris’ (2004) assertion that autonomy is a pre-requisite for discretion, if bureaucrats at the street level are found to enjoy a degree of autonomy then they may also have the potential of make discretionary decisions. Lipsky suggests that this is especially true in more complex roles (2010:13), where SLB are expected to autonomously exercise their discretion to make informed and partial decisions. That is not to suggest that these bureaucrats exist in a ‘supervision free-space’ without oversight or rules; but that, in fact, in their roles these bureaucrats will

face complex human situations that require them to make individual discretionary decisions. In these roles, the 'rule-book' can never cover the uniqueness of every situation, and so if bureaucrats are to remain effective, they need to be trusted to make individual discretionary decisions. Although one of the aims of new public management is to remove opportunities for individuals to use discretion in the interests of reducing variable responses to situations and stimuli (i.e. uniformity and standardisation), complex professional roles often deal with complex situations that cannot always be accounted for by standardised forms. Moreover, although the exercise of discretionary power is viewed positively by streetlevel scholars it should also be noted how discretionary powers may be viewed negatively by other public administration actors; especially where they might lead to inconsistent policy outcomes, implementation failure and democratic deficit. However, from a street level perspective, discretion in public roles appears to still be an important dynamic that allows policy deliverers the ability to react to complex, poorly defined, and inconsistent policy prescriptions. As the research of Jagd has shown (2008; 2009), discretion is often predicated upon a degree of trust between manager and worker, which is based upon experience and social capital. Classical organisational theorists have shown that inter-worker trust and successful organisations go hand-in-hand (McGregor, 1967; Likert, 1967; Agyris, 1973). As Cook and Wall (1980:39) point out:

> 'trust between individuals and groups within organisations is a highly important ingredient in the long term stability of the organisation and the well-being of its members'.

Thus, trust between co-workers, and between managers and workers, builds and facilitates the 'giving' of discretionary power. Furthermore, properly exercised discretion builds greater trust, which research suggests helps create productive and efficient delivery organisations (Tummers and Bekkers, 2014). This discretion-trust assertion needs to be seen in the light of new public management, which has seen a significant transition away from large public bureaucracies to smaller, more efficient units of policy delivery in which the 'decision-envelope' of bureaucrats is significantly reduced (Trusty and Cervey, 2012). Thus, new public management may have facilitated a movement of discretionary abilities away from front line workers to their

managers (Christensen and Lægreid, 2008). This shifting in the locus of power may have had the twin effect of diminishing the 'street level' phenomena, whilst improving the consistency of policy outcomes (Persson and Goldkuhl, 2010). This means the transition of discretionary power from workers (at the street level) to managers may have led to a greater convergence between the *intended* policy outcomes envisaged by elite-policy makers and the *actual* policy outcomes at the street level. However this narrative has since been somewhat discredited; and as per Evans' 'exaggerated death of discretion' (2011), the slew of contemporary SLB research points towards to the enduring power of workers to make discretionary decisions as driving partial street level policy outcomes. This means that the discretionary behaviours and decisions of workers remain relevant and important at the street level for transforming policy outputs into policy outcomes (Ellis, 2011; Kim, 2013; Sevä, 2014; Tummers and Bekkers, 2014; Evans, 2015; Hupe et al, 2015).

4.3.3 Conditions of work

Lipsky (2010) notes how street level behaviours are contingent upon bureaucrats operating under certain workplace conditions.He suggests that these conditions include a low availability of resources relative to the tasks workers are being asked to perform; the demand for their services, which tends to increase to meet supply; goal expectations for the agencies tends to be ambiguous, vague and challenging; and performance orientated goal achievement for individuals tends to be difficult to measure. In this thesis it is supposed that the *individuals* and *organisations* (all either primarily or secondarily are funded by agencies of government, and therefore experience varying degrees of 'push' towards government environmental policy. Where *individuals* were delivering valuable services to users, then it also supposed that they were be in demand by their users. It was further assumed that these bureaucrats at the street level felt a degree of 'pressure' to deliver partial forms of the service to meet the unique requirements of the users (i.e. emphasise various different Malawi principles to meet different pressures).

4.3.4 The 'age of governance'

The fundamental nature of public bureaucracy has changed since classical street level bureaucracy was first articulated by Lipsky (1979) (see Section 4.3). These changes

have both affected street level studies but also, potentially, have been influenced by the dynamic relationships that the theory highlighted (Lipsky, 2010). Most importantly, this period (1979 to 2018) has seen the rise of new public management in the 1980's (Smith and Lipsky, 1996) which sought to reform public bureaucracies towards private sector processes, values, and methods. In turn, this (along with other factors) has led to a 'narrative of change' within public bureaucracies and the exercise of political power (Hysing, 2009). As Howlett and Ramesh (1995) suggest the narrative has changed from *government* to *governance*, and with it the policy implementation landscape that bureaucrats (and policy deliverers) operate under. This transition from an implementation landscape of command-and-control style *government* to a more complex and collegiate governance landscape has had a number of effects on the application of SLT.

Firstly, the role of public bureaucrats has moved towards greater managerialism, accountability, and oversight which, some have suggested, has eroded aspects of the 'street level power' enjoyed by bureaucrats (Evans and Harris, 2004; Durose, 2011; Tummers and Bekkers, 2014). Hall et al (2015) agree with this supposition and suggest that this erosion of streetlevel power (i.e. discretion and autonomy) is increasingly leading to public bureaucrats being less the 'deliverers' of services themselves, as the 'procurer' of agents to deliver government services. The other side of this argument however points out that SLT has reflexively adapted to this new mode of governing (Evans and Harris, 2004; Evans, 2015), and that because it represents a fundamental aspect of the nature of the policy-practice interface continues to offer explanations of partial implementation at the 'coalface' (Kim, 2013; Hupe et al, 2016). Thus, it is now argued that SLT continues to offer utility for explaining partial policy implementation behaviours at the policy-practice interface (Hupe et al, 2015).

Secondly, these bureaucrats are now faced by the combination of having to account for a growing number of poorly defined, inconsistent, and technical policies (Brodkin, 2003:149); whilst concurrently having to address a near constant 'reform-agenda' in the face of reduced *austerity* budgets and evolving demand patterns (Lowndes and McCaughie, 2013). These compounded pressures continue to force individual bureaucrats (contingent on autonomy and discretion) to have to translate or interpret

policies through individual frames of educational level, personal values orientation, or professionalism (Weissert, 1994; Noordegraaf, 2001). This leads, once again, to the potential for partial policy outcomes at the street level. These changing decision-making frames are particularly important in environmental sector organisations which have historically been dominated by ethical values-driven *individuals* (Egri and Herman, 2000; Borzaga and Ermanno, 2006; Sine and Lee, 2009). Though as suggested by Dunleavy (1982), and later by Hwang and Powell (2009), these value-driven frames are often coupled to lower levels of professionalism in environment-facing professionalised individuals. Certainly, the individual dilemmas that bureaucrats face between their ethics and 'masters' are not new (Hutton and Massey, 2006), and indeed, balancing these dilemmas has been always at the core of SLT. That said, this particular balancing dynamic (values driven, low professionalism) in environmental streel level individuals may be changing, and as argued by Sevä (2014) street level professionalism may now be increasing within these individuals. Though the degree to which this might come at a 'cost' of values-driven behaviours in environment-facing bureaucrats remains un-researched.

4.3.5 Critique of classical street level bureaucrat theory

Despite the many valuable contributions SLT has made in bringing together implementation studies and public policy, as well as offering an 'inside out' view on the dilemmas of public bureaucrats, it has been criticized. Before moving on to considering how SLT will be utilised in this research, it is therefore important to adopt a critical perspective by reviewing the relevant criticism that this theory attracts. These critique fall into three broad categories, which are used to frame presentation of the critique.

Primarily it has been argued that SLT singly fails to capture the complexity of managerialist public bureaucracy in the age of *governance* (Moore, 1987; Howe, 1991; Cheetham, 1993). For example, Howe (1991) argues that SLT does not 'keep pace with the march of new public management' towards greater managerial accountability. This is, of course, true to a point, as a critical element of new public management was to reduce the prevalence of partial outcomes and maximise congruence between policy imperatives and outcomes. Others however (Ellis, 2011; Evans, 2011) suggest

that the complexity of public roles always outpaces the progression of managerialism, so that there is always a streetlevel 'envelope' where there are reduced rules and accountability, and which is open to partial decisions by bureaucrats. The movement towards greater privatisation of services and public outsourcing (Rhodes, 1994) means that bureaucrats are increasingly being seen as 'service commissioners' rather than 'service providers/deliverers' (Boviard, 2006). This means that, as Savi (2014) argues, collegiate public policy delivery (e.g. public-private-voluntary partnerships) is becoming more important than ever. Furthermore, the discretionary ability to decide policy implementation is moving increasingly towards non-public deliverers, such as the voluntary sector (Kim, 2013).

Secondarily, it has been suggested that SLB theory does not truly account for the role of the mangers of SLB, and how they influence discretion, autonomy and coping strategies. Evans (2011:371) suggests that Lipsky 'brackets off managers from critical analysis – treating them as a homogenous group', with little accounting for the difference in types and styles of management that affect SLB under them. Moreover, 'managers' may act as SLB themselves. This notion of managers acting as SLB was explored in Hupe and Van Kooten (2015) who found that in certain circumstances managers could act discretionarily in deciding which policy pronouncements their workers should prioritise, and therefore shielding their workers from particularly worrisome policies. In this way managers act to protect workers, rather than in the best interests of the organisation; contradicting Lipsky's original view of street level behaviour being separated from management.

Thirdly, classical street level bureaucracy has been critiqued for not representing the importance of professional statuses and professionalism in bureaucrats. Research suggests that levels of professionalism can significantly impact the degree to which bureaucrats are discretionary, and the kinds of discretionary decisions they make (Ellis, 2011; Evans, 2011; 2015). Moreover, many professional SLB are values-driven, which informs their discretionary behaviour (Friedson, 2001; Alden, 2015). Evans and Harris (2004) suggest that such SLB frame their discretionary behaviour through the prism of their value-systems. This can lead to partial and bias discretionary behaviour in, for example, policing towards violent offenders (Vinzant et al, 2011), or nursing-

values (Bergen and While, 2005). However, Sevä and Jagers (2013) (and others) point towards the dynamic tension within contemporary environmental managers, between their inherent values-orientated ethos, and their increasingly professionalised roles and organisations. Whilst certainly the UK environmental voluntary sector[35] (EVS) is a significantly under-researched sub-field of the wider voluntary sector, Clifford et al (2013) have highlighted how individuals within it, and organisations, are still (largely) values-led. It might therefore be expected that environmental managers at the street level are (autonomy and discretion dependent) to varying degrees conflicted between exercise of their values, and policy-notions.

This concludes the critique of classical SLT. Section 4.4 next highlights how SLT has remained relevant to contemporary understandings of public administration at the policy-practice interface. It then discusses how this thesis operationalises an amended version of the theory to explore the *implementation deficit* of the ecosystem approach.

4.4 Reimagining street level bureaucracy

4.4.1 An enduring theory

Streetlevel theory is irrepressible. It conceptualises relationships between the final agents in the 'policy chain' and the consumers of policy that, despite adapting to changes in the public administration landscape, it remains as relevant today as when it was first conceived. However, whilst SLB is the name given to a certain aspect of these relationships, classical SLB does not describe all of the relationships in their entirety, with other concepts also offering insights. These include the 'point of entry' studies of Hall (1974) or the 'public encounter' of Goodsell (1981). Instead, as Hupe et al (2015:3) articulate, SLB theory is just one name for describing one part of the fundamental relationships between policy deliverers and policy consumers under the current form of *governance*. For many years after Lipsky's original text (1979), street level studies were tightly bound to his vision of the theory, though as the nature of

[35] Precise definitions of what the voluntary sector, and voluntary sector organisations, are exactly remain difficult to articulate, with little consensus about terminology and precise definitions. Despite many suggested definitions, the not-for-profit sector, the charitable sector, the nomenclature of the 'voluntary sector' has been shown in research to be the one with the greatest resonance with the general public and consequently is the most used in current literature (Milbourne, 2013).

governance has evolved, so too have scholars started to expand the field of street level enquiry. Instead of seeking to prove/disprove the utility of the original theory for explaining an evolving world of *governance*, these studies have rather sought to expand the parameters of what is considered a street level phenomena (Bernstein, 1991; Deakin and Walsh, 1996; Taylor, 2007; Ellis, 2011). This emerging discourse, promoted by various authors and studies, has been recently captured in one text by Hupe et al (2015). Hupe et al's (2015) new 'state of the art' publication sought to highlight how classical SLB theory is one point in a far larger dynamic that falls out of a broader conceptualisation of streetlevel terminology. Peter Hupe and colleagues suggested that for the true value of streetlevel studies to be realised, an inclusive, ambitious, and exploratory use of the theory needs to be realised. It is in this emerging research discourse that this thesis makes an original contribution. This thesis tests the boundaries of contemporary SLT under a new, and hitherto un-explored condition. Before discussing this condition, it is necessary to broadly define contemporary understandings of environmental street level bureaucrats.

4.4.2 Conceptualising 'environmental street level bureaucrats'

SLT has only seen limited use for exploring the implementation behaviours of *individuals* and *organisations* in environmental management settings (May and Winter, 1999; 2007; Nielsen 2006; Sevä, 2014; Kornov et al, 2015). This limited use in an environmental context is despite the wide use of SLT to offer explanations of implementation behaviour in other fields of public administration. Sevä (2014:10-11) explains this lack of scholarship in terms of the perceived under-professionalisation of individuals and organisations in environmental management settings. Sevä (2014) further suggests that this un-professionality might have played a confounding effect on classical streetlevel studies, which have tended to work in normative public sector settings. That being said, this view of environmental managers and environmental management settings as un-professional has now evolved into environmental management roles increasingly seen as professionalised (Power, 1991). This is especially true as the nature of public service provision increasingly moves towards private and voluntary sector outsourcing (Smith and Lipsky, 1996).

Street level bureaucrats were classically characterised as professional public sector bureaucrats (teachers, doctors, lawyers) who enjoyed significant face-to-face contact with members of the public (as per Section 4.3), and who were non-voluntary in their need to access government services (Lipsky, 2010:28). However, as per Section 4.3.4, just as *governance* may have changed the nature of policy and public service delivery, so too have conceptualisations of those bureaucrats actually undertaking policy delivery. In accordance with Smith and Lipsky (1996), one of the major features of public administration under *governance* is the outsourcing of service delivery to a wide range of providers. This includes the voluntary sector who, in addition to being part of disaggregated service delivery models, also support the delivery of policy through networks, partnering, and contracting (Milbourne, 2013). Furthermore, as outlined in Billis (2010) this has meant that VSO's are unceasingly hybridised public-voluntary sector organisations and undertake different roles and contracts situationally and reflexively. This has led to a far greater prevalence of voluntary sector agents being conceptualised as SLB (Smith and Lipsky, 1996; Kim, 2013). Despite this, the literature conceptualising environmental public and voluntary sector organisations and individuals as delivering policy at the street level remains sparse. Therefore, this thesis suggests that, due to the increased professionalisation of environmental managers (Power, 1991; Sevä, 2014); and the degree to which many are delivering government originated policies (projects and services); that a new 'working description' of environmental SLB be advanced:

> 'public and voluntary sector street level deliverers of environmental management policy and services'

The environmental SLB sampled in this thesis were in many cases responsible for delivering services and projects that primarily originated (and are funded) by public, or quasi-public, organisations. All of these organisations were to variable degrees reliant on primary or secondary direct funding from government, though it is considered that this might be a diminished factor following seven years of *austerity*. That being said, these organisations still largely exist in a state of permanent resource constraint (at an organisational scale) with demand for their services outstripping supply. Keiser (2010) has shown how despite not having regular face-to-face contact with the public,

individuals within organisations can still act with discretion in delivering policy in street level situations. Sevä (2014) has also highlighted how environmental SLB still face similar street level pressures forcing them to adopt coping strategies and policy translations associated with classical SLB. Ultimately, this thesis argues that these 'environmental SLB' are acting at the street level in partially delivering government environmental policy objectives. This dynamic is articulated by Sevä (2014):

> 'All bureaucrats who work at the end of the 'policy chain' have both autonomy and discretion that enable them to influence policy outcomes'

Therefore, this thesis advances an expanded conceptualisation for 'environmental SLB'. The utility of this concept, and the labelling the EVS as environmental SLB, is explored and critically evaluated in light of the data and findings in Chapter Nine.

4.4.3 Street level dynamics under weak policy

This thesis is contributing to a contemporary literature that is seeking to redefine and enlarge the field of streetlevel studies to reflect the evolving nature of public administration (as per Ellis, 2011 and Hupe et al, 2015). This thesis suggests that professionals acting at the frontline of delivering unconventional (to classical SLB literature) publicly funded projects and services are doing so in a 'street level' fashion. This means that, in the contemporary (and growing) world of public contracting for environmental services and projects (Ellis, 2011), that the deliverers of these projects are doing so in way that is mindful of public policy pressures; and that are to a degree subject to 'discretion' (Section 4.3.1), 'autonomy' (Section 4.3.2), and 'conditions of work' (Section 4.3.3). Where this thesis is evaluating the ecosystem approach as 'policy' subject to street level dynamics, it is a weak policy, contrary to the majority of other streetlevel studies and discourse. Critically, what remains unknown is the degree to which direct lines of causation can be drawn along the 'policy chain', or if, instead, the ecosystem approach is too weak a policy-notion to survive percolation down through multi-level governance in a form that elicits street level responses to it. Important to these understandings about weak policy effects at the street level was the way in which SLT was operationalised for this research, and this is discussed next in 4.4.5.

4.4.5 Operationalising street level theory for this research

This research operationalised SLT for exploring the partial implementation of the ecosystem approach within the BR case study. Overarchigly, it needs to be established that empirical uses of SLT have a very long and rich tradition in tandem with qualitative and ethnographic methods (Brodkin, 2003). Based upon this rich tradition this research sought to understand qualitatively how *individuals* from a variety of different *organisations* based within the BR were operationalising different aspects of an ecosystem approach in their professional practice. It sought to understand the degree to which their abilities to undertake these operationalisations were supported or constrained by the variable levels of discretion, autonomy, and the conditions of work that they operated under. These variables were expected to differ between individual roles, between different types of organisation, and the particular interests of each organisation. Moreover, were the conditions of work under which they were operating effecting or constraining their abilities to autonomously and discretionarily operationalise aspects of an ecosystem approach? It was expected that the differences between these variables would lead different uses of the Malawi principles, and to applications of an ecosystem approach at the street level. Therefore, *individuals* sampled in this research were asked about which of the principles were being put into practice and which were not, and the reasons behind this, to try and discern where streetlevel forces were affecting implementation.

This thesis conceptualised the street level dynamics of discretion, autonomy, and the conditions of work under a *necessarily* broad, non-specific, and somewhat *exploratory* format. This thesis sought to capture and describe a broad spectrum of discretionary behaviors and experiences which might offer original insights into the fundamental natures of discretion and autonomy in public and voluntary environmental organisations as they seek to translate and operationalised weak policy-notions (regime). The regime effectiveness literature highlights how bridging the regime effectiveness and policy implementation can be conceptually challenging (Victor et al, 1998:3; Galbreath & McEvoy, 2012), but such ‘full policy chain’ explanations hold the promise of offering important insights for explaining implementation challenges (Bulkeley, 2005; Bulkeley & Betsill, 2005). Moreover, by using these broad

descriptions of the discretionary and organisational conditions effecting implementation behavior a number of overarching themes of implementation behavior at the street level might be found. Therefore, whilst this thesis' broad and non-prescriptive operationalization of SLT might be less rigorous in its application of the street level variables compared to other leading-edge contemporary scholarship in this field (Hupe et al, 2015; Hupe, 2015; Thomann et al, 2018) it still offers originality and value where it shows how a broader street level framing, still iterative in nature, might capture a wider range of street level phenomena within a problematique.

This broad and non-exclusive investigation conducted under an iterative street level framing revealed three cross-cutting and emergent themes that were driving and affecting the behaviours of individuals and organisations (as per Finlay and Sandall, 2009; Durose, 2011; Hughes and Condon, 2016). This meant that different strata of *individuals* within the BR were variably able to utilise aspects of an ecosystem approach (to meet public expectations) based upon key themes related to their conditions of work, autonomy and discretion. Indeed, it was imagined that these different strata of *individuals* within the BR utilising aspects of an ecosystem approach were fundamentally doing so under larger organisationally driven conditions. Thus, the different kinds of *organisations* that were sampled within the BR and how these were expected to witness street level dynamics is explored next, in Section 4.5.

4.5 Street level organisations within the case study area

The case study area chosen for this research was populated by a spectrum of *organisations* and *individuals* who might have been acting as street level users of an ecosystem approach (as per Section 3.3). Some of these individuals were directly employed by government as public servants, others represented different varieties of voluntary sector organisations who were variously 'close' and 'far' from government, and policy influence.

4.5.1 Organisations in the case study area: public sector

The public sector is concerned with delivering government services and policy, and public sector workers are the individuals most commonly described as SLB. Despite

the new strictures placed upon them under new public management, conceptualising public sector workers as SLB remains the 'main-stream' of street level research (Hupe et al, 2015). This is increasingly also true of public sector workers in environmental settings undertaking typical transactional services (May and Winter, 1999; 2007; Sevä, 2014), as well as public sector employees working on external or partnered environmental projects. The land between the moors falls within the purview of Devon County Council, as well as North Devon and Torridge District Councils (as well as small parts of the transition zone which fall under West Devon District Council). It is also subject to a plethora of other national and regional scale public agencies, which include a number pursuant to this research (e.g. Natural England, Defra, the Environment Agency). The degree to which these public sector organisations are considering an ecosystem approach at the street level is considered in Chapter Eight.

4.5.2 Organisations in the case study area: environmental voluntary sector

Another key group of *organisations* active within the case study area are those of voluntary or charitable nature. Environmental voluntary sector (EVS) organisations are essential components in contemporary 'partnership-based approaches' to environmental management (Comerford et al, 2010:44). 'The voluntary sector' is a very broad and inclusive sector, with organisations differing significantly in terms of their fundamental nature (e.g. mutual's, charities, academic institutions), how they are funded (e.g. state funded, privately funded, membership funded), and their activities (e.g. publicly funded projects, advocacy, campaigning).

Clifford et al (2013) and Scott et al (2014) both note how the English EVS plays a critical, but little recognised role in the management of the English landscape and delivery of government environmental policy. Although there is very little systematic research conducted into the UK EVS (Clifford et al, 2013), and consequently little known about them (Kirsop-Taylor, 2018[B]), the most authoritative source of macro-data comes from the National Council of Voluntary Organisations (NCVO) who compile almanacs based upon data from the Charities Commission and other sources. The NCVO almanac 2017 suggests that there are 165,802 national voluntary organisations (UK). Though based upon size and income these organisations tend to be

heterogeneously distributed throughout the entire sector, with a small number of large organisations 'making significant amounts of money'[36]. England is home to 80% of the organisations within the sector (133,380), with 17,389 being based in the South West of England. Milbourne (2013) hypothesises that the issue of 'organisational size' is the key driver of behaviour within the contemporary UK voluntary sector. Certainly the contemporary sector faces substantial and even existential pressures (Markham, 2011) and Milbourne suggests that these pressures are driving a bi-furifacation of the entire voluntary sector into 'larger' and 'smaller' organisations. These two camps are characteristically unique. Milbourne's (2013) hypothesis suggests that there are now broadly 'larger' bureaucratised VSO's, who tend towards being business driven, utilising significant amounts of governmental contracting, managerial processes. These organisations are far better aligned to government policy (Milbourne, 2013). Thus, it might be expected that these broadly 'larger' organisations might be closer to an ecosystem approach as a policy-notion, insomuch as an ecosystem approach is seen as being government 'policy'. However, considering that these tend to be larger and more powerful organisations, the degree to which they align towards weak government policy remains unknown. In contrast, Milbourne (2013) suggests that the other kind of organisation tended to be broadly 'smaller', more ethics/values driven, historically less aligned towards government policy, and less bureaucratised.

Importantly for this research, the majority of organisations within the case study area were voluntary in nature (Chapter Five explores this more thoroughly). Moreover, many of the driving dynamics of the EVS outlined (above) through the work of NCVO are returned to in Chapter Eight. Critically however, the EVS is sub-sector of the voluntary sector about which incredibly little is known, and especially for the kind of 'micro' scale organisations that are so important to contemporary environmental and land governance (Clifford et al, 2013).

[36] The NCVO 2014-2015 financial data (the latest available) suggests that the most significant source of funding for the English voluntary sector was 'individual income', which is a corollary of 'voluntary' and 'earned income'. Thus, 'earned income' (and to a lesser degree 'government funding') were found to be important aspects of how EVS organisations support themselves financially. Although the entire sector made £20.6 Bn in 2014-2015, the preponderance for 'individual income' was especially true in the kind of micro scale organisations (59% of income), that proliferate in the BR. This was found to be even more for environmental VSO's, who on average relied upon 'individual' funding for 71% of their income.

4.6 Conclusion to Chapter Four

This thesis has opted to explore the *implementation deficit* of an ecosystem approach within the BR case study area through a novel interpretation of a street level theoretical frame. Based upon the dynamics outlined in Chapter Four, this thesis hypothesises that a wider interpretation of streetlevel forces are affecting how the natural resource management *organisations* (and *individuals*) within the case area are implementing elements of the ecosystem approach. This hypothesis and line of enquiry is addressed by ancillary question three, which asks:

‘Are street-level forces influencing implementation of an ecosystem approach?’

This research proposed a series of original notions, one iterative and theoretical (that ‘environmental street level’ influences have an effect on weak policies), and one empirical and inductive (the use of the ecosystem approach with an English biosphere reserve). When combined these two notion create the overarching title to this study. This main results of the questions could have ramifications for how the *regimes* of global environmental governance are conceptualised for implementation. Moreover, if proved valid the main line of argumentation could also suggest future directions for promoting implementation of the ecosystem approach in England. By exploring the application of street level dynamics against weak policy this thesis makes an original iterative contribution to the developing field of SLT. That said, as highlighted by Waylen et al (2014B), designing appropriate and robust methodologies to capture and evaluate ecosystem approaches can be challenging. The particular approach taken by this research is addressed next in Chapter Five, the Methodology.

Chapter Five: Methodology

‘Street level research should seek to combine the techniques of organisational analysis and ethnography to examine the relationship between organisational structure and policy delivery. It uses intensive case studies to explore complex processes and patterns that cannot be adequately understood through experimental or quantitative research designs’. Brodkin (2003:156)

5.1 Introduction to methodology and guiding principles

This thesis has thus far presented a topic of enquiry (The ecosystem approach, Chapter Two), situated a setting for this topic to be explored (The North Devon UNESCO biosphere reserve, Chapter Three), and presented a theoretical framing which might offer original and significant explanations about its *implementation deficit* (SLT - Chapter Four). At the conclusion of Chapter Four the particular challenges of designing methodologies to evaluate implementation of an ecosystem approach were highlighted. Due to the complexity of this approach to natural resource management, and the propensity for its users to adopt partial interpretations of it, each evaluation of the ecosystem approach should (whilst based upon common forms) be situationally and geographically bespoke. Therefore, this thesis built upon the methodological recommendations of Waylen et al (2014[B]) the empirical experiences of Scott et al (2014), and others (Flitner et al, 2006; Natural England, 2016) to construct the methodology for addressing the three ancillary questions. The process of constructing this methodology was directed by four ‘guiding principles’ linked to this study:

1. The literature review highlighted how the majority of previous studies in this field have used large national-scale sampling frames (Flitner et al, 2006; Scott et al, 2014; Waylen et al, 2014[A]; Hunt and Howard, 2015). As part of this approach, these other studies have chosen to sample elites at the apex of different national-scale land management designations and projects. Whilst these approaches (and studies) have offered important comparative contributions to this discourse, there is a substantive lack of ‘thick’ analysis of

(as championed by Adger et al, 2011) the implementation of the ecosystem approach. Whilst certainly comparative studies have the potential to enhance external validity, the lack of 'thick' understandings may indicate a lack of deep understanding about what is driving the *implementation deficit* at domestic local-scales.

2. This research also requires a methodology to account for the sampling of *organisations* and *individuals* as the units of analyses. These need to be sampled in depth, within a single case study area. In the vein of Alvesson's research (2003), this suggests the need for a research design and research methods that are inclusive, exploratory, and reflexive enough to capture both *individual* and *organisational* perspectives.

3. The ecosystem approach is a complex, multi-disciplinary approach to integrated natural resource management which, as noted in Bellamy et al (1999) can be difficult to evaluate. These challenges are compounded by the imperative to evaluate implementation over a long time scales, to evaluate implementation from multiple stakeholder perspectives, and the multiple sources of data needed for such analysis (Waylen et al, 2014[B]). Thus, any evaluation of an ecosystem approach should not focus solely on individuals and disciplines but upon connections, interactions, outcomes, and critically, the emergent themes that are driving implementation.

4. Capturing the opinions of *individuals* who might be partially deciding which elements of the ecosystem approach are being implemented was key to evaluating the utility of SLT in this regard. Thus, a methodological approach which could reveal honest, fine detail, individual opinions on this subject was required. This pointed towards a broadly ethnographic approach, though the depth and composition of the ethnographic engagement needs to be carefully considered to account for the depth of knowledge required and participants' requirements and constraints.

Based upon these four guiding principles, Section 5.2 outlines the chosen research design; Section 5.3 the research methods; Section 5.4 the research ethical considerations; and Section 5.5 the broad characteristics of the data collection sample.

5.2 Research design

The research design selected for use in this thesis had three main components. Firstly, based upon the four guiding principles a thesis–wide research design that utilised both inductive and iterative reasoning was employed (Ali and Birley, 1999; Johnstone, 2004). Mixed reasoning approaches were used to create new understandings leading to theory (inductive - for ancillary questions one and two), as well as to empirically test the validity of existing theory (street level bureaucracy - ancillary question three). Thus, whilst both inductive and iterative logics were used specifically for different ancillary questions, these logics were not homogenously utilised throughout the entire data collection and discussion. The use of different epistemological logics for different aspects of the research were not inimical to each other (Fereday and Muir-Cochrane, 2006). As noted in Bulmer (1954) there is not necessarily anything epistemologically problematic with using different logics for 'exploration' activities and 'inspection' activities within the same study; without becoming too tied down in a fixed position. Moreover, it has been suggested that 'thick empirical' social research should be driven by the dual understandings of 'what is new, and what is true' as Faulkner (2017) describes; and that mixed research designs that can account for iterative aspects ('the true') and inductive aspects ('the new') in the same study are more than valid, but essential. These are described as 'sensitising strategies' and as outlined by Morse (2003:190):

> 'A single project in which multiple strategies are used. One or more strategies form the major mode of data collection. Sensitising strategies are those strategies of data collection that supplement the major mode, they are not used as a standalone project, but rather are used to generate clues that are confirmed within the project using other strategies'.

Secondly, a qualitative, mixed methods approach was selected, meaning that this research design is what Johnstone (2004) describes as 'mixed method, mixed methodology'. Although clearly the *implementation deficit* of ecosystem approaches are complex and multi-faceted (i.e. the four categories of barriers to implementation, Section 2.8), in the interests of maximising the internal validity and repeatability of this thesis a full ethnography was not utilised (as per LeCompte and Goetz, 1982). Instead, this research design opted for a mix of data collection methods - semi-structured interviews, documentary analysis, and observation of BR partnership meetings. These methods required the collection of both primary and secondary data and are explored in greater detail in Section 5.3 below. The data collection process produced qualitative data which was transformed in a thematic analysis (Chapters Seven and Eight) to support comparative discussion, as well as for understanding (both thematically and empirically) how SLT is playing a role in implementation of ecosystem approaches.

Finally, driven by the research gap for in-depth, 'thick' (Geertz, 1973) or 'deepdish' (Brodkin, 2003:161) explanations of the *implementation deficit* (Principle Two, above), a case study approach was selected (congruent with Phillips and Joao, 2017). As described in Section 3.3 the selected case study was the North Devon UNESCO biosphere reserve. This BR was considered to be a *generally* 'exceptional' case study within wider UKMAB (as argued in Sections 3.1.3 and 3.1.5). That said, in its potential for applying an ecosystem approach it was considered that it was a broadly typical case study. As with any research design there are advantages and disadvantages to using case studies, though as Brodkin (2003:157) highlights, there are many advantages in using case based approaches for street level research. These advantages include where examination of the data is often conducted within the context of its use (Yin, 2013) or as noted by Zainal (2007), case study approaches offer added value in exploring the complex interactions between variables which are not always captured by survey or experimental designs. That said, case study approaches do attract critique. The most common being that where the findings from deep explorations of single locations may just be idiosyncratic of place or situation and have reduced validity in other situations (i.e. 'external validity', the degree to which they are generalisable). This critique has led some scholars to consider case study

approaches to only have utility in studies *exploring* social phenomena (Abercrombie et al, 1984). That said, contemporary scholars increasingly utilise case study approaches for both *explanations* of social phenomena, as well as *explorations* of them (Schnell, 1992; Stake, 1995; Flyvberg, 2006; Yin, 2013; Yazan, 2015). Indeed, critiques of the case study approach that focus around narrow conceptualisations of generalisability have been largely eclipsed by mature understandings of 'what it means to generalise' (Moriceau, 2010).

With regards to the selected case study, the WNBR offers a large pool of similar sites that the findings of this research might be applicable within. However, these sites were selected in part (by UNESCO) to be deliberatively heterogeneous, making the generalisability of findings challenging anyway. Therefore, it was supposed that selected results from this thesis may have the potential to be generalisable to other UK biosphere reserves, on account of the shared governance, legal and funding constructs, which broadly prevail for all. The case for this UKMAB generalisability, a case for wider generalisability across EUMAB, is made in the Section 9.6.

5.3 Research methods

Three qualitative methods for data collection were used in this study. All three were broadly qualitative in nature and included a documentary analysis of literature belonging to organisations within the BR; semi-structured interviews with both national and BR scale participants; and observations of meetings of the BR partnership. This choice of three methods that combine interview, observation, and documentary analysis were selected in respect to meeting the 'guiding principles' for the methodology and were considered especially apt for identifying street level dynamics. A triangulation between these three methods was used to meet Brodkin's (2003) suggested mix of methods for discerning street level influences upon implementation (as per the introductory quote at the start of this Chapter).

5.3.1 Qualitative document analysis

The first method involved the collation and analysis of documents about BR-scale *organisations* with reference to implementation of aspects of an ecosystem approach.

Qualitative document analysis involves the systematic collection and analysis of documents with particular reference to pre-set themes or, as Altheide et al (2008:27) suggest, it is a 'research methodology centred on following the emergence of interpretations as they arise in the examination of document data'. This was therefore a form of thematic analysis, which complements the wider use of thematic analysis utilised in the interview discourse. The purpose of this qualitative documentary analysis was to better understand how organisations within the BR publicly considered their position on an ecosystem approach (and the Malawi principles) both explicitly and tangentially. These understandings could then be used to supplement and triangulate from the emergent key themes. An initial collection and analysis of documents is a well-established method for triangulation in political science research, or as suggested by Denzin (1970:291) 'the combination of methodologies in the study of the same phenomenon'. This thesis was mindful of Bowen (2009:27) who notes how the prevalence of documentary analysis alongside other methods in contemporary research can be at the expense of scholarly rigour (e.g. process and outcomes). That said, this methodology agrees with Burnham et al (2008:187-190) on the fundamental utility of documentary sources for triangulating upon complex policy implementation phenomena.

The documentary sources were identified initially though discussions with a number of key 'gatekeepers', which can be seen in Table 5.1, and through the researcher's own desk-based research. This research collected various forms of documentary evidence, such as strategies, management plans, field notes and reports. A full listing of the documents collected can be seen at Annex D.

Table 5.1 Key organisational gatekeepers

Organisation	Gatekeeper	BR spoke/hub governance role
Devon Wildlife Trust	Lisa Schneidau	'NIA spoke' lead
Torridge District Council	Andrew Austen	North Devon Planning Officer
University of Exeter	Michael Winter	BR Chairman

Biosphere team	executive	Andy Bell	Biosphere Manager

These documents were deliberately collected and considered as the first method where it supported broad and wide ranging contextual understandings about the organisations, their connections, and approaches that might be considered 'ecosystem' in nature (Annex D). Critically, these were not documents created purposively for this research, instead as described by Bryman (2001:370) they were 'documents that are simply out there, waiting to be assembled and analysed', or 'secondary data sources'. Each document was initially read by the researcher to identify general themes and narratives around what they considered an ecosystem approach to be, if they were seeking to implement it, and how they were seeking to implement it. This was followed by a second reading by the researcher, and the coding of each document against each of the Malawi principles and points of guidance in finer detail. This iterative reading and coding helped the researcher understand how each organisation was responding to the individual notions of an ecosystem approach, and critically, helped build nuance and bespoke lines of enquiry for the participant interviews.

5.3.2 Semi-structured interviews

Semi-structured interviews are one of the most commonly utilised methods of qualitative data collection and were used with each participant in this data collection (Holstein and Gubrium, 1995:1; DiCicco-Bloom and Crabtree, 2006). Using semi-structured interviews *after* the collection and analysis of secondary data sources (i.e. documents) facilitated understandings on how individual participant's organisations considered their organisational-scale consideration of an ecosystem approach. In turn, this understandings helped in the creation of bespoke individual-scale interview discourse about individual implementation at the street level. This approach (secondary organisational-scale, then primary individual-scale data collection) sought to build understandings about how organisational-scale imperatives affected or were influencing the individual scale decision-making and translation at the street level.

Three quarters of the semi-structured interviews undertaken were with BR-scale participants and explored their understanding of implementation of an ecosystem approach within the case study area. These semi-structured interviews used a formal structure of questions (at Annex E). However, the semi-structured nature of these questions allowed for context rich discourses to occur following each question, following prompting and clarification; or in response to the earlier organisational-scale secondary data about their specific organisation. That said, overarchingly, these were semi-structured questions structured around a common format of questions (at Annex E).

Much like the documentary analysis method, introductions to participants for semi-structured interviews were facilitated by the organisational 'gatekeepers', in line with Table 5.1. Interviews tended to be conducted once a degree of rapport had been developed between the researcher and the participant (as per Burnham et al, 2008:231-235). Rapport was developed through building trust and respect between the gatekeepers and the interviewer (as per DiCicco and Crabtree, 2006:316) over the course of many weeks before the data collection was started. This included informal meetings and conversations, understanding shared interests and experiences, and highlighting the value the research would bring to their organisations and interests. Once established, this rapport was critical in facilitating access to other interview participants, as well as for supporting an ease of questioning and greater unstructured conversations with gatekeepers. The semi-structured interviews were predominately conducted face-to-face with the participant on site at their facility (where applicable). Where possible they were conducted in private.

This thesis drew heavily from the tradition of 'reflexive interviewing' (Anderson, 2008; Davies, 2008). The reflexive tradition suggests that qualitative research and data collection are an exploration of both the researcher themselves, as well as the researched subject. This means that identifying, owning, and managing the inherent bias that researchers introduce to interactions is central to controlling interviewer bias (McNabb, 2002:126). Thus, final outputs of research are shaped as much by the views and bias of the researcher and the methods used to conduct the research, as the research process itself. Taking a 'reflexive approach' to research is common to

qualitative case study approaches (Davies, 2008) and it played an important role in this thesis (Section 9.5) explores this more fully, in reflection). Taking a 'reflexive approach' broadly supported the collection of data (and particularly interviewing) in a form that identified and separated off the inherent interviewer bias that the researcher brought to the investigation. This meant that the interviewer adopted a self-critical approach to regularly (before each interview) trying to identify their own biases and assumptions that might affect the research and to account for these.

A quarter of the semi-structured interviews were undertaken with national-scale participants, in the interests of contextualising implementation of the ecosystem approach in an English institutional setting. These interviews were more 'elite' in nature, and were concerned with the challenges that policy makers, policy transposers, and epistemic elites (Brinkmann, 2007) encountered with regards to the ecosystem approach. Phillips (1998) highlights how elite-interviewing methods are well utilised in political science research (Phillips,1998), though as Ostrander (1995) comments, they are less well utilised in other disciplines. Burnham et al (2008:231-236) highlight how elite interviews are most commonly semi or unstructured interviews with individuals who hold leadership or expert political positions and differ from other forms of interviewing. Elite interviews can be very effective at uncovering expert opinions (gained over long careers leading to apex positions in policy hierarchies) about the 'hidden' dimensions of politics and policy. Considering the many multi-level challenges in operationalising the ecosystem approach (as per Section 2.8 and Figure 2.2), it was considered that a selected number of elite interviews could offer significant value for connecting BR-scale policy outcomes (Hochschild, 2009). That said, elite interview methods can offer both opportunities as well as pitfalls for research of this nature (Kezar, 2003). These can include challenges of gaining access to the elite, acquiring their trust, and building rapport (Mikecz, 2012).

Practically, these challenges can all be exacerbated by being a junior researcher (Harvey, 2011). Though as Jupp (2006:85) suggests, this challenge can also be turned to an advantage by the contentious, well organised, persistent, professionally-minded, and personable junior researcher. In undertaking elite interviews in this research it was found that a number of practical challenges complicated the data collection. Gaining

access to the diaries of elites to arrange times for interviews often meant engaging with secretaries whose 'default setting' appeared to be to 'deflect' (Harvey, 2011; Mikecz, 2012). Similarly, other elites displayed a propensity to try and fundamentally re-orientate the strategic direction of the interview; and reasserting control over these power relationships required strength and balance. Whilst maintaining respect and openness to the opinions of elites was important (Lancaster, 2017) these interviews were not fully unstructured which would have allowed for elite-led discourse; instead their semi-structured nature allowed for the researcher to reassert and maintain the focus (as argued by Berry, 2002; and Harvey, 2011).

In summary, the challenges inherent in elite interviewing were deemed more than offset by the potential gains from elite opinions on the multi-level connections between the ecosystem approach as national-scale policy, and as implemented at the domestic local-scale. Critically, the challenges outlined in the literature were overcome through careful reflexive consideration of interviewer demeanour, professionalism, and rigour.

5.3.3 Observation of the biosphere partnership

The third method involved observing meetings of the BR partnership. Observation is a method with a long history of use in the social sciences (Timasheff, 1948), and as Lewis-Beck et al (2004) suggests involves 'the systematic collection and examination of verbal and nonverbal behaviours as they occur in a variety of contexts'. The observation method involves watching and recording what individuals, and groups of individuals, do and say in a variety of social contexts, including in community settings, in the workplace and at group events). There are a range of different approaches to observational data collection that social researchers can adopt. These are primarily concerned with the degree of control or intervention used by the researcher; broadly categorised as 'naturalistic observations' (i.e. non-participant) or 'participant observations' (Altmann, 1974; Cassell and Symon, 2004). Observational methods have both advantages and disadvantages. On the positive side they are a direct and reliable approach to collecting primary data of actual social phenomena and they allow for understandings of complex group interactions (not revealed in individual interviews or even focus groups). On the negative side, observational methods can pose questions about 'observer positionality' where the position that the interviewer takes

relative to the subject can create problematic power dynamics. Moreover, they can reduce the utility of random sampling, and they limit the potential for probing or explorations of themes of interest to the researcher (Cassell and Symon, 2004:7-8). That said, Jamshed (2014) points out that observational methods can still have positive impacts in mixed method approaches, especially when paired or combined with interviews, as in this thesis. Indeed, this thesis utilised an observational method alongside the semi-structured interviews and document review, so that it could substantively triangulate upon *individual*, *organisational*, and group perspectives on the ecosystem approach. The BR partnership was deemed a particularly promising location for overt, but non-participatory observation of those group dynamics which would offer rich contextual understandings about the realities of operationalising elements of an ecosystem approach. It was envisaged that observing this group and its interactions might offer insights into intra-partnership connections, barriers, alliances and power-dynamics (Cook et al, 2012) that characterised their interest and alignment towards the ecosystem approach principles. Furthermore, understanding and evaluating implementation of an ecosystem approach within designations or landscapes necessarily produces multi-level understandings (as per Österblom et al, 2010). Thus, using a method that had the potential to capture any important multi-level dynamics was deemed important.

Finally, it is worth reiterating that these three methods were not just selected on their individual merits, but in their ability to synergistically triangulate on 'thick' explanations of the *implementation deficit* as encouraged by Adger et al (2011) and adopted by this thesis (see methodological 'guiding principles'). The value of matching organisational document analysis with unstructured/semi-structured interviews was particularly noted in Brodkin (2003:160), who suggested a triangulation of these two methods offering particular value in street level studies. When coupled to observations of the BR partnership and its group dynamics, this was considered a well-structured and robust research method to meet the three ancillary questions posed by this thesis.

5.3.4 Universe of cases

As in Section 3.4, the BR was the case study selected for this thesis. A potential universe of cases was constructed from the environmental voluntary, public and private sector organisations (and their employees) who either currently worked on or have until recently worked on BR-located natural resource management projects. This universe of cases was compiled from desk based research and discussions with key organisational gatekeepers (Table 5.1) and as displayed in Table 5.2 it identified forty-five organisations which fitted the profile. These were classified according to their local-scale organisational size (within the BR) and nationally/internationally (if appropriate), and their constituted-legal standing (voluntary, public, private).

Table 5.2. Organisational sample

Organisation name	Local size	Regional/national size	Organisation type
Badger Trust	micro	small	voluntary
Barn Owl Trust	micro	small	voluntary
Beaford Arts	micro	small	voluntary
Buglife	micro	medium	voluntary
Bumblebee Conservation Trust	micro	small	voluntary
Butterfly conservation	micro	small	voluntary
Christie Devon Estates	medium	medium	private
Cornwall Council	medium	large	public
Cornwall Wildlife Trust	micro	medium	voluntary
Dartmoor National Park	na	medium	voluntary
Devon Birds	micro	small	voluntary
Devon County Council	large	large	public
Devon Gardens Trust	small	small	voluntary
Devon Mammals Group	micro	small	voluntary
Devon Moth Group	micro	small	voluntary

Devon and Severn Inshore Fisheries and Conservation Authority	micro	medium	public
Devon Wildlife Trust	medium	large	voluntary
Food and Wildlife Advisory Agency	small	small	voluntary
Mid-Devon District Council	medium	medium	voluntary
Mid-Devon District Council	small	large	public
National Farmers Union	medium	large	voluntary
National Trust	medium	large	voluntary
Natural Devon	micro	small	public
Natural England	small	large	public
North Devon Area of Outstanding Natural Beauty	micro	*na*	Public/vol
North Devon Coastwise	micro	*na*	voluntary
North Devon District Council	large	*na*	public
North Devon Nature improvement area	micro	*na*	voluntary
North Wyke	Small	*na*	voluntary
North Devon UNESCO Biosphere Reserve	micro	*na*	voluntary
Plant life	micro	small	voluntary
Rothamstead Research	medium	medium	voluntary
Royal Society for the Protection of Birds	small	large	voluntary
Royal Horticultural Society	small	large	voluntary
Silvanus Trust	micro	*na*	voluntary
South West Lakes Trust	micro	small	voluntary

Tarka County Trust	micro	*na*	voluntary
Taw Torridge estuary forum	micro	*na*	voluntary
The Environment Agency	medium	large	public
The Forestry Commission	medium	large	public
The National Trust	medium	large	public
Torridge District Council	large	*na*	public
West Country Rivers Trust	micro	small	voluntary
West Devon (District) Council	medium	*na*	public
Ward Forester	small	small	voluntary

Based upon standard metrics of organisational size (as per EU guidance[37]) this constellation of cases was comprised of thirty 'small', eight 'medium', and two 'large' local-scale organisations. There were fourteen organisations with 'small' national or international presences. There were twenty-nine VSO's, thirteen public sector organisations, and one private sector organisation.

5.3.5 Sampling strategy: biosphere reserve

This constellation of potential organisations (Table 5.2) was deemed inappropriate for meeting the requirements for a 'thick' or 'deep-dish' exploration of the implementation deficit of an ecosystem approach within the case study area. There were too many organisations (number) and the degree to which they were considered to be 'important' to considerations of integrated natural resource management within the case study area was contestable. Thus, a classification system that facilitated a targeted reduction in the number of potential organisations for the sampling strategy was sought, and an insider/outsider classification was selected for use.

[37] Eurostat (from the EU) defines company classification based upon: *Micro Business* = less than 10 employees and/or turnover under £2 million. *Small Business* = less than 50 employees and/or turnover under £10 million. *Medium Business* = Less than 250 employees and/or turnover under £50 million. *Large business* = more than 250 employees and/or turnover of more than 250 million (Eurostat online).

5.3.5.1 Insider/outsider classification

The relative importance of each organisation to the BR was crystallised in their classification as either ‘insiders’ or ‘outsiders’ (Maloney et al, 1994). Page (1999) suggests organisations are rarely true ‘outsiders or insiders’ to a larger entity to which they have a relationship, and instead exist on a ‘spectrum of relationship’. That said, the work of Merton (1972) has proved resilient in justifying the value of insider/outsider classifications. As with Rueda (2005) and Lindval and Rueda (2013), this classification has particular value for describing relationships within and between policy actors and entities (Bennington and Hartley, 2004:361). Thus, each organisation was assigned a place as either an ‘insider organisation’ or an ‘outsider organisation’ based upon four considerations:

1. Their membership of the BR partnership
2. Their membership of other BR located natural resource management partnerships and initiatives
3. A subjective assessment of their ‘power’ regards the BR
4. An objective assessment of organisational size

Although somewhat subjective, this classification process is an example of the insider/outsider dilemma that can frustrate such a categorisation system (Gregory and Ruby, 2011; Kertsetter, 2012). That said, this classification system brought value in terms of purposively targeting which organisations to focus on (as per Mabry, 2008:223). To illustrate how organisations were assigned categories, the logic behind two examples are presented:

1) Cornwall Wildlife Trust is not situated within the BR but wields significant local and regional scale power in terms of conservation management and best practice. That said, they have not been engaged in any discrete BR scale projects in recent years and so they were deemed ‘outsiders’.

2) The National Trust is not a member of the BR partnership, conducts very little work within the BR institutional architecture, but it wields significantly more

power (over landscape scale projects, land management practices, innovative projects etc) and so was designated an ‘insider’.

The results of the insider-outsider classification can be seen below in Table 5.3.

Table 5.3 ‘Insider-outsider’ classification of natural resource management organisations in the biosphere reserve

Insider:	Outsider:
Devon Wildlife Trust*	Ward Forester
North Devon Nature Improvement Area*	Royal Society for the Protection of Birds
Rothamstead Research*	Royal Horticultural Society
West Country Rivers Trust*	West Devon Borough (district) Council
The National Trust	Silvanus Trust
The Forestry Commission*	South West Lakes Trust
Torridge District Council*	Plant life
The Environment Agency*	Mid-Devon (district) Council
Tarka County Trust*	Devon Moth Group
Taw Torridge estuary forum*	Devon Mammals group
North Devon UNESCO Biosphere Reserve*	Devon Gardens Trust
North Devon Coastwise*	Cornwall Wildlife Trust
North Devon Area of Outstanding Natural Beauty*	Devon Birds
Natural England*	Cornwall County Council
Natural Devon*	Butterfly conservation
National Farmers Union*	Buglife
Devon County Council*	Barn Owl Trust
Christie Devon Estates*	Badger Trust

Beaford Arts*	Farming & Wildlife Advisory Group (SW)
North Devon (district) council*	
Devon and Severn IFCA*	

Broadly speaking, members of the BR partnership were, by their very engagement, viewed as 'insiders' to the working of the BR. Those organisations marked with an * in Table 5.3 are listed and active members of the BR partnership. The final group of cases selected for this research was comprised in the majority from 'insider' organisations with a lesser amount of 'outsider' organisations.

5.3.5.2 The importance of the biosphere reserve partnership

The BR partnership was a critical partner for the data collection of this thesis. As discussed in Chapter Three the partnership can be described as a normative natural resource management partnership (as per Woods, 2004) comprised of different organisations, agencies and individuals who meet to discuss the substantive activities of the BR under direction of the BR executive team. The BR partnership is now structured around a spoke and hub governance model, with organisations and individuals populating one (or more) or eight 'spoke' groups (that align to the BR's strategic aims) and a single central 'hub' group (as per Section 3.4.4). The entire partnership (all available/willing individuals) meet every quarter, and these meetings are opportunities for networking, sharing knowledge and best-practice. The BR partnership has evolved a range of internal power-based architectures and roles, such as 'leaders', 'thought shapers', and 'deliverers'. Moreover, within the partnership there is a complex architecture of trust and propensity for co-delivery of projects based upon previous partnerships and established relationships. These often lead on a strategic bespoke activity, and tend to try to act as the foci for discussions, leading funding applications, and delivering presentations on existing projects and activities within the BR. The partnership meetings tend to be structured, but somewhat boisterous, with much discussion leading to spin off actions and activities, but with little in the way of strategic decision-making occurring in this setting. Instead, this strategic decision-making is undertaken primarily by the 'hub group' of the BR partnership. This 'hub group's' mission is to offer strategic leadership for the other members of the

partnership (and the BR executive team) in delivering the BR strategy. It is comprised of only eight members so as to increase speed of decision-making and agility. Interestingly, each member of this 'hub group' is broadly typical of other outer partnership members. This implied a degree of trust between member organisations to have one individual representing their strategic interests in the inner, strategic, group. Thus, early and sustained engagement with the partnership for sampling purposes was *critical to this research* and is highlighted in Chapter Nine.

5.3.5.3 Key organisational gatekeepers

Table 5.1 has already highlighted the key gatekeepers who supported the data collection of this thesis. As advanced by Campbell et al (2006) and Larson and Soto (2008) it was considered that the key to engaging the BR partnership lay in identifying 'gatekeepers' within both the partnership itself, and in the organisations that comprised it. These individuals were identified and approached before data collection began, to establish whether they, their organisation, and potentially their colleagues were interested in participating in the data collection. The gatekeepers outlined in Table 5.1 offered significant value in promoting the researcher to potential participants within the BR partnership. They also facilitated the researcher's attendance at BR partnership meetings (e.g. observational method), and help the researcher better understand the governance and functioning of the BR partnership.

An inclusive sampling strategy that included both gatekeepers and workers within their organisations (and others) was needed to gauge how the multi-level, street level influences that may have been affecting partial implementation. In line with Crook and Ayee, (2006) and Hupe and Van Kooten (2015), this thesis considered that both managers and workers might be seen to exhibit street level tendencies towards the implementation of an ecosystem approach. Thus, multiple grades of employee within each organisation were considered as potentially exhibiting street level tendencies, though as with Evans (2015), the nature of behaviour was expected to differ across grades. Indeed, the final group of participants included a broad spectrum of grades from 'Chief executives' to 'Project support staff'.

5.3.6 Sampling strategy: National

In addition to sampling within the BR, this thesis conducted a series of elite interviews with national figures engaged in the study and transposition of the ecosystem approach. These elites tended to share national-scale interests in implementing and transposing an ecosystem approach, and some form of connection to its operation within the case study. Thus, whilst these elites were offering predominately national-scale reflections on the semi-structured questions, these were always rooted in the case study to greater and lesser degrees. The critical aim of these contextual interviews was to try and bridge the inherent multi-level nature of the *implementation deficit*, and seek views and opinions from those who might offer wider contextual and reflective opinions back on implementation within the BR. These elites were identified through snowball sampling (e.g. Tansey, 2007) that began with the key gatekeepers (as in Table 5.1). These elite individuals occupied a range of senior positions in academia and national-devolved government(s). Considering the ongoing interest in operationalising the ecosystem approach in natural environment agencies, interview participants were sought in Natural England, Scottish Natural Heritage and Natural Resources Wales. That said, the elite interviews numerically comprised only 25% of the interview data collected.

5.3.7 Recruitment, consent, and the use of field notes

Each of the identified potential participants (as identified in collaboration with the gatekeepers) were initially approached through an introductory email (usually with an attached endorsement from a gatekeeper). A date for a face-to-face meeting was then negotiated with those who responded favourably to the introductory email. Those who did not respond to the initial email were sent a second email a month afterward, with no further contact after that.

Participants were given a copy of the combined 'Participant consent and information form' (Annex F) ahead of each semi-structured interview. Participants were asked to read this form, and then if they agreed with its contents, to sign a hard-copy of the form. This consent and information form covered the key concerns of confidentiality, anonymity, the research project itself and the right to withdraw, in line with University of Exeter's research ethics process.

Collecting data in an appropriate format is an essential element of the interview and observation methods in social research (Burnham et al, 2004). In the case of this research, a combination of different mediums were utilised. Primarily, the face-to-face interviews were recorded (after participant consent was obtained) through a digital recording on an iPhone 6 using the *italk* application. These face-to-face interviews were supplemented by handwritten field notes that were collected in a standard notebook and consulted later during the data analysis. Nine elite interviews were conducted over the telephone and were captured on the same iPhone 6 through the *call recorder* application. Data files from both *italk* and *call recorder* were encrypted whilst on the device, and subsequently deleted following transcription of the interviews. Finally, the one video conferenced elite interview was conducted through *Skype* (version 7.31.30) and recorded on *italk*.

5.3.8 Thematic and street level analysis

Chapters Six to Nine utilised a broadly thematic approach to the analysis of the collected data. Braun and Clarke (2006:79) consider thematic analysis as 'a method for identifying, analysing and reporting patterns within data'. Although thematic, or systematic (Thomas and Harden, 2007:4) analysis are considered a by some to be an overly simplistic approach (Guest, 2011) others argue that it offers value in terms of 'thick' and 'emergent' understandings from complex qualitative data. As Tjandra et al (2013) suggest 'thematic analysis is an approach for the extraction of meanings and concepts from data and includes pinpointing, examining and recording patterns or themes'. One of the key features of thematic analysis is the iterative and incremental reviewing of the qualitative data first against pre-set themes which, over subsequent reviews or 'stages'[38], build towards new themes emerging from the data. In this case, the thematic analysis began with the Malawi principles and points of guidance as the pre-set themes (Chapter Seven), but these evolved over time as re-reads of the transcripts led to new understandings, patterns and emergent themes (Chapter Eight). In a similar manner to Thomas and Harden (2007), this thesis considered that thematic

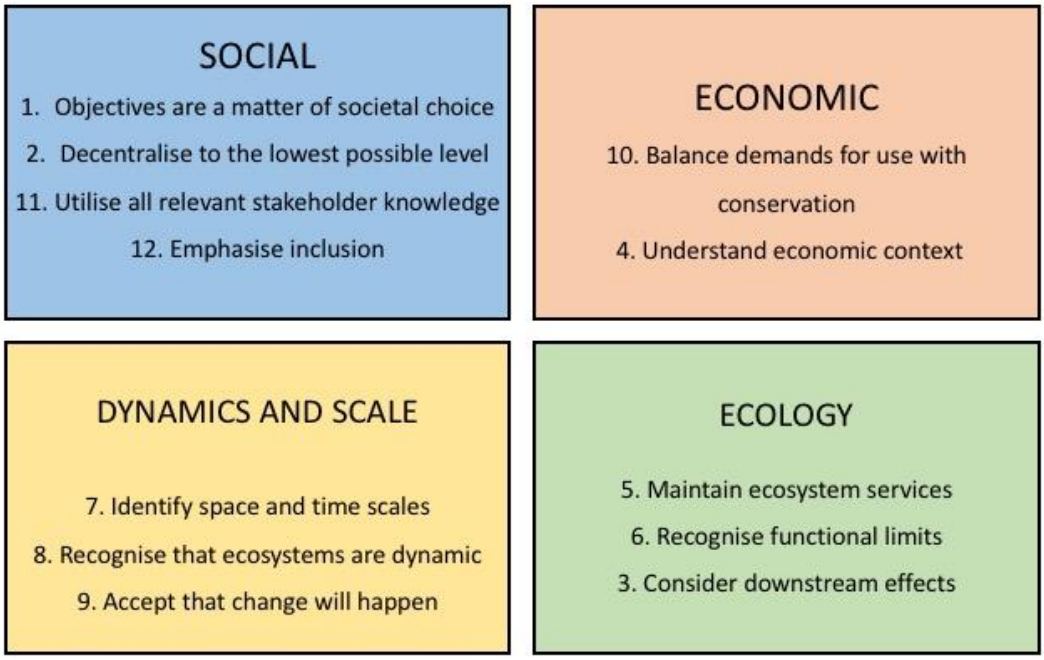
[38] The six phases of thematic analysis are 1) Familiarisation with the data (including transcription which was conducted Sept-Oct 2016) 2) Generating initial codes (including synthesis and simplification of data into codes) 3) Searching for themes in the data 4) Reviewing themes 5) Defining and fine-tuning themes 6) Writing up the findings.

analysis would offer the optimal analytical method for understanding this rich and complex cluster of knowledge, policy, and opinion. With this analytical method in mind:

Chapter Six used thematic analysis to understand comprehension of the ecosystem approach leading to enhanced understandings about *ecosystem science*, and the interpretations by *individuals* and *organisations* implementing an ecosystem approach.

Chapter Seven utilised a thematic analysis of the interviews and documents to understand the 'likeliness' that each of the Malawi principles being implemented within the BR, based upon a subjective triangulation from the data (as per Smith and Maltby, 2003; Flitner et al, 2006; etc). To facilitate this comparative analysis in Chapter Seven each Malawi principle was clustered thematically into one of four categories based upon the matrix advanced by Korn et al (2002).

Figure 5.1. Thematic clusters for analysing use of an ecosystem approach



Source: Korn et al, 2002

This matrix allowed each principle to be explored individually and thematically and led to each being designated (on a five-part ordinal scale) as how 'likely' they were be being used within the BR, from 'very unlikely' to 'very likely' (e.g. Vagias, 2006). This

matrix also facilitated the emergence of new themes from the data by suggesting pre-existing patterns of commonality across the Malawi principles.

Chapter Eight moved from the pre-set themes of the Malawi principles used in Chapter Seven to explore street level implementation in terms of three of cross-cutting themes that emerged from the data (as per Tjandra et al, 2013). Analysis of new and emergent themes from the data can be the ultimate goal of thematic analysis (Braun and Clarke, 2006), and so Chapter Eight is the logical outcome of Chapter Seven.

5.4 Ethics

A University of Exeter ethical consent application for this study was applied for on 09/12/15 following approval of the research design by supervisors Professor Winter and Dr Russel. A full copy of this successful ethical consent application can be seen at Annex G. This was accepted on 02/02/16 for a period of twelve months by the University of Exeter Social Science and International Studies ethics panel.

At multiple junctures participants were assured of their rights of participation and especially their rights to confidentiality. In the interests of maintaining high ethical standards participants were informed of their rights in the 'Participant consent and information form' (Annex F) ahead of each interview. Moreover, ethical consent was gained electronically from the BR partnership members ahead of the group observation sessions. Participants were regularly reminded that participation was voluntary and that if they wanted to no longer be part of the study, then their right to withdraw would be respected.

5.4.1 Data protection

The data protection statement on the 'Participant consent and information form' highlights the key points of data protection in the study (see Annex F). Specifically, all interviews, and the partnership observation events were recorded digitally (in *italk* or *voice recorder*) and labelled with a unique identifying code. The key to this code was kept on a securely encrypted spreadsheet held by the researcher on a University of Exeter computer. On completion of the data collection period (September 2016), all

the interviews and the observation events were transcribed by the researcher, and the original digital interviews were destroyed.

5.4.2 User engagement and feedback

As a means of gaining participant feedback on the data collection process, each participant was informed (on their 'Participant information and consent form') that:

> 'Interview tapes and transcripts will be held in confidence. They will not be used other than for the purposes described above and third parties will not be allowed access to them (except as may be required by the law). However, if you request it, you will be supplied with a copy of your interview transcript so that you can comment on and edit it as you see fit (please give your email below so that I am able to contact you at a later date)'.

Similarly, it was felt to be important that the interests surrounding the researcher and the funding of the study were declared to the participants. This was articulated to participants in the 'Participant consent and information form':

> 'This research is co-funded by the University of Exeter and the Food and Environment Research Agency. The information it collects will help to better inform the debate about the environmental management strategies be used in the UK, and specifically how the ecosystem approach of the Convention on Biological Diversity is interpreted and implemented. The results of this work will be used as part of a doctoral thesis, as well as to facilitate the creation of academic papers published in specific academic journals. It may also be used in a limited number of presentations and conference reports.'

This concludes the element of this methodology outlining how the thesis data collection was to be undertaken. Section 5.5 follows, in which the broad overriding characteristics of the collected data sample are presented.

5.5 Characteristics of empirical evidence

Section 5.5 descriptively presents the broad characteristics of the empirical evidence that was collected. Their results are discussed substantively in the empirical Chapters Six to Nine.

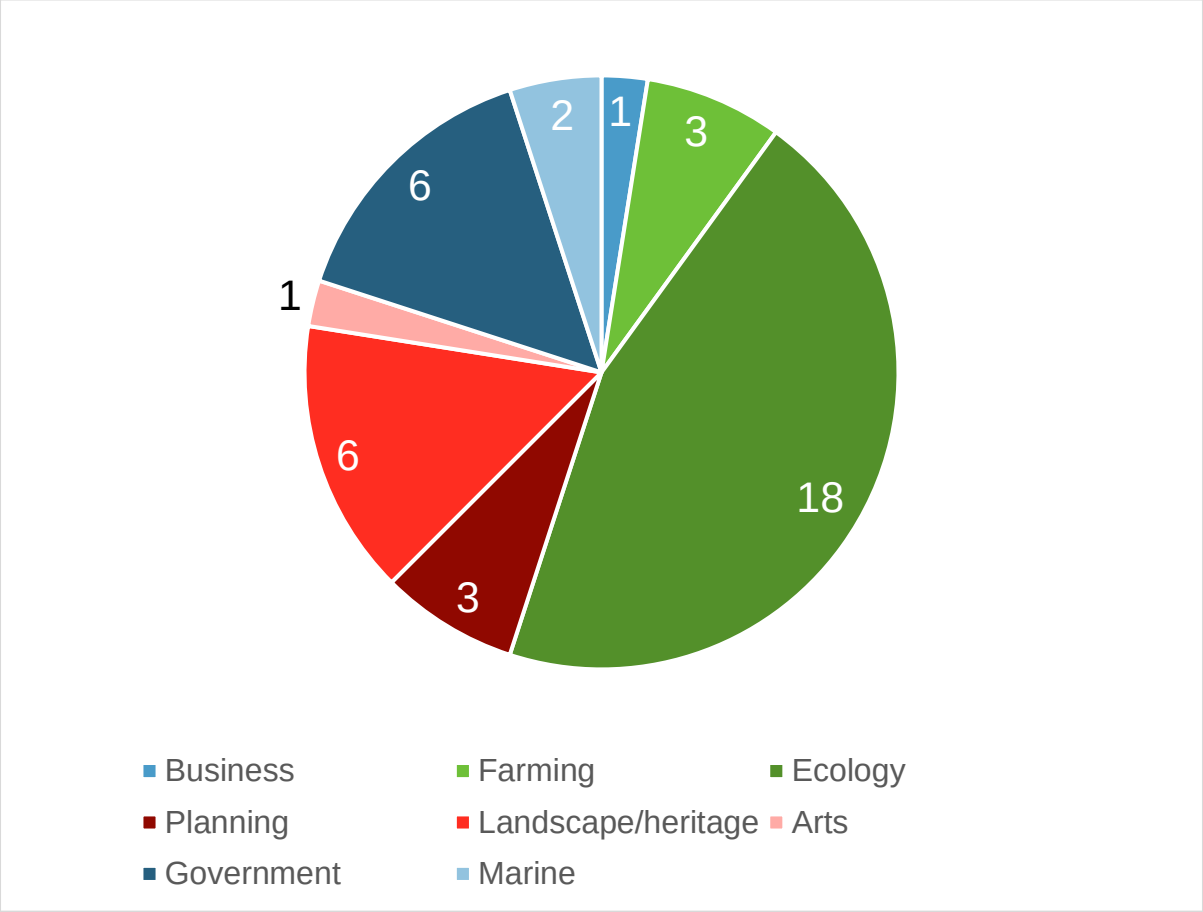
5.5.1 Broad characterisation of empirical evidence

The data collection process ran from 01/03/16 until 10/10/16. Following this data collection, all of the interviews were transcribed from the *italk* and *call recorder* applications and from a recorded *skype* video-conference, into MS *word* format. This transcription was completed on 12/10/16. All completed transcripts were then encrypted and safely stored as per the data protection strategy (Section 5.4.1).

By the conclusion of the data collection forty semi-structured interviews had been undertaken, nineteen organisational documents collected, and four partnership observations undertaken. There were thirty semi-structured interviews with BR respondents, ten semi-structured interviews with national respondents, nineteen organisational documents, and four partnership observation events. There were forty interviews (Female = 11 of 40; Male = 29 of 40), comprised of participants from both the national and local public sector (13 of 40), the voluntary sector (23 of 40), the private sector (1 of 40), and from *independents* (2 of 40).

Excluding the *independent* participants (2 of 40), the remaining participants (38 of 40) were all representing *organisations* in their interview. This included interviews with representatives from organisations based solely within the BR (9 of 38); BR based representatives of regional-scale organisations (7 of 38); BR based representatives of national-scale organisations (8 of 38); BR based representatives of international-scale organisations (4 of 38); and national organisations (9 of 38). Twenty five participants self-identified as senior managers, fourteen as middle managers, and one as a junior manager. Eleven had been educated to undergraduate level, twenty two had been educated to post-graduate level, seven had been educated to doctorate level. As Chart 5.1 shows, their mix of (self-identified) ‘professional backgrounds’ was more complex. However, broadly, the greatest number of participants (18 of 40) were from an ‘ecology’ background.

Chart 5.1. Professional backgrounds of participants



5.5.2 Document review

The first data collection method involved the identification, collection, and analysis of documents which supported and elucidated *organisational* responses to the ecosystem approach (as outlined in Section 5.3.1). These secondary data sources were sought for organisations at the BR-scale, and not for the national-scale organisation. These secondary data sources were the only source of data concerned solely with *organisational*-scale data for analysis. The collected documents (*n*=19) included strategy documents (6 of 19), management plans (4 of 19), audits (4 of 19), assessments (2 of 19) and reports (3 of 19). A full listing of documents collected can be found at Annex D.

5.5.3 Semi-structured biosphere reserve-scale interviews

In total, thirty participants were interviewed from within the BR. Within this group there

were twenty-eight ‘insider’ interviews, and two ‘outsider’ interviews. This was comprised of nineteen participants from VSOs’, eight public sector workers, and two *independents*. The majority of sampled VSOs’ were ‘micro’ in composition (13 of 19), with a smaller amount of ‘medium’ sized organisations (3 of 19) (classifications as per Eurostat, see footnote 36). The public sector participants came from predominately ‘large’ organisations, typical of large district and county public organisations. A complete overview of these biosphere scale interviews can be seen at Annex H.

Despite the number of interviews exceeding initial expectations there were some notable omissions in terms of individuals and organisations. From the ‘insider’ category, Rothamstead Research were not sampled, despite much effort to try and secure an interview (note: Rothamstead were ‘insiders’ due to their membership and participation in BR partnership). Similarly, the ‘outsiders’ RSPB and RHS Rosemoor who might have been helpful to discussions were not sampled. There was specific and targeted interest Tarka County Trust, which despite being contacted did not respond to the invitation to participate. The only organisation which was sampled more highly than originally planned was the National Trust which provided three interviews. This research coincided with the National Trust’s new strategic pivot towards nature and conservation (seen in mid 2016, under Dame Helen Ghosh), and so these participants had much to say on the integrated management, the ecosystem approach, and partnership working.

5.5.4 Elite national-scale interviews

The data collection included ten national–scale semi-structured interviews with policy elites. The high level results of this cohort can be seen at Annex I. These elite-participants were purposively sampled from the very small community of epistemic and policy elites seeking to operationalise the ecosystem approach around the UK and in devolved governance. This cohort of elites represented participants from a number of the major research projects of the last ten years seeking to understand national implementation, with the creator of the CBD’s ecosystem approach itself, and with representatives from each of the devolved governments seeking to operationalise the ecosystem approach (excluding Northern Ireland).

5.5.5 Group observation

A target of two ‘observation sessions’ of partnership meetings was set initially established and by the conclusion of the data collection period four had been achieved. Exceeding the target in this way improved the potential for understanding inter-organisational dynamics within the partnership through direct observation. These four observations were illuminating for highlighting intra-partnership power dynamics, overt and covert hierarchies, and groupings.

5.5.6 Data Analysis

After the data collection the primary and secondary sources (collected through the semi-structured interviews, documents, and group/participant observations) were collated and inputted into NVivo eleven for analytical purposes. These sources were then all coded against a framework of key points, or nodes, relating to the ecosystem approach that had been created ex-post data collection. Throughout the thematic analysis this framework of analytical nodes evolved to suit the themes that emerged from the data but that had not been anticipated in the ex-post creation of the framework (e.g. they unexpectedly emerged from the data through analysis) (at Annex J).

5.6 Methodology conclusion

As Chapter Five has sought to highlight, designing methodologies to capture and evaluate implementation of an ecosystem approach can be complex. The selected methodological design and methods were selected to suit the unique interests of this research thesis (e.g. three ancillary questions); and as outlined in Waylen et al (2014[B]) there are many potential ways and aspects of an ecosystem approach that might be captured for evaluative purposes. Certainly the four methodological principles have guided the key methodological decisions and as Section 5.5 highlighted, the data collection exercise yielded an abundance of data. Following the iterative thematic analysis each of the three ancillary questions were addressed, and through these, the main statement at the heart this thesis was addressed. Chapter Six next presents the findings relevant to ‘ancillary question one’ (Section 2.10) exploring what participants thought the ecosystem approach actually was.

Chapter Six: How do participants understand an ecosystem approach: *ecosystem science*

(Response from Participant 30): 'If you asked ten people to come up with a description of the ecosystem approach they would all come up with something slightly different'.

6.1 Introduction to Chapter Six

Chapter Six marks the start of presentation and discussion of the empirical results of this thesis[39]. Chapter Six presents the results and discussions about participants' reflections and responses to ancillary question one, 'how is the ecosystem approach understood by implementers'. Understanding what participants considered the ecosystem approach to be was important for confirming the degree to which there were variable and confused understandings (e.g. *ecosystem science*- see chapter 2). These findings facilitated this thesis' engagement with the critical and contemporary discourse surrounding *ecosystem science* (as per Scott et al, 2014; Waylen et al, 2014[A]; DeLucia, 2015) presented in Section 2.9. In turn, understanding how this state of *ecosystem science* was affecting participant capacities and capabilities for operationalising an ecosystem approach led to understanding about partial interpretations at the street level (Chapters Seven and Eight). Establishing first what these implementers considered an ecosystem approach to be was the first step towards triangulating on implementation at the street level. In presenting these results, Chapter Six discusses aspects that were both theoretical and empirical in nature, rather than splitting theoretical and empirical results into separate Chapters.

[39] Both the results and discussions to each ancillary question are presented sequentially in Chapters Six, Seven and Eight, and Nine. Participant comments taken directly from the data transcript are directly quoted in "*italics*". Where a participant quote is used the participant who made the comment is identified as PX, and similarly where documents are quoted, or referenced, they are presented as DX, and refer to the documentary data seen in Annex D.

6.2 What did implementers understand the ecosystem approach to be?

As Section 2.9 highlighted, the literature contained many studies that identified partial and differing interpretations of the ecosystem approach (e.g. UNESCO, 2001:18; Hartje et al 2003) as a significant barrier to its consideration, and implementation (Smith and Maltby, 2003; Waylen et al, 2014[A]; Scott et al, 2014) by its intended audiences and users. The substantive thesis of Fish and Saritisi (2015) discussed how different interpretations about what an ecosystem approach was could act as a significant impediment to its use. It was therefore considered (in Section 2.9) that interpreting participant's opinions on what the ecosystem approach actually was, was an important step in assessing if there is an *implementation deficit*, and if so, characterising and exploring it. To facilitate understanding about what participants thought it was, the first ancillary question posed a question that would reveal participants opinions on this subject.

6.2.1 Broad responses to ancillary question one

A majority of participants responded to ancillary question one (30 of 40) and a majority of these respondents were from at the BR-scale (26 of 30) (as opposed to the national-scale). As Table 6.1 shows, this line of enquiry yielded many divergent understandings about what participants considered the ecosystem approach to be.

Table 6.1 Participant responses to ancillary question one

P	Category of response	Individual variables			Organisational variables	
		Background	Governance	Grade	Sector	Size
5	'ecosystem services'	planning	-	senior	public	large
15		landscape/heritage	spoke	middle	voluntary	micro
16		landscape/heritage	spoke	senior	voluntary	micro
17		arts	spoke & hub	middle	voluntary	micro

7		ecology	spoke	senior	public	medium
4		ecology	spoke	middle	public	large
20		landscape/heritage	-	middle	voluntary	large
25		landscape/heritage	-	middle	voluntary	large
31		ecology	-	middle	voluntary	large
37	'integrated management'	farming	-	senior	voluntary	small
3		ecology	spoke	middle	voluntary	micro
-		ecology	spoke	senior	public	medium
30		government	-	senior	public	-
32		ecology	spoke & hub	senior	voluntary	medium
34		ecology	hub	senior	public	micro
40	'ecological' concept	government	-	senior	public	-
1		ecology	spoke	senior	independent	-
4		farming	spoke	middle	voluntary	micro
6		ecology	spoke	middle	voluntary	micro
8		landscape/heritage	spoke	senior	independent	-
13		ecology	spoke	senior	voluntary	medium
19		ecology	spoke	senior	voluntary	micro
27		marine	spoke	senior	public	medium
35	CBD-aligned conception	farming	-	middle	public	large

2		planning	-	middle	public	large
9		ecology	spoke & hub	senior	voluntary	micro
18		ecology	spoke	senior	voluntary	medium
29	proxy for Lawton	landscape/heritage	-	senior	voluntary	large
33	did not relate	business	spoke	senior	private	micro
10	landscape scale	ecology	-	middle	public	small

Source: created by author

The different responses to ancillary question one listed under 'category of response' in Table 6.1 were categorised in seven discrete groups (four principal responses and three outlier responses).

- Those who offered a response that broadly matched the CBD-conception of an ecosystem approach (e.g. Section 2.3) (4 of 26);
- Those who understood the ecosystem approach as an 'ecological' concept for environmental management (8 of 26);
- Those who understood the ecosystem approach as an approach to 'integrated land management' (6 of 26);
- Those who understood the ecosystem approach as broadly relating to 'ecosystem services' (9 of 26);
- One participant who considered the ecosystem approach as a proxy for the Lawton report (e.g. Section 2.7);
- One participant who thought the ecosystem approach related entirely to landscape scale approaches;
- One participant who did not relate to the term 'ecosystem approach' at all.

As seen in Table 6.1 the various participant responses that addressed ancillary question one were placed into four principal categories (*ex-post*) (congruent with Miles and Huberman, 1994). These four categories of participant opinion were then used as

the introductory themes in the thematic analysis of participant's understanding(s) of the concept of an ecosystem approach. These categories of understanding are presented, thematically analysed, and discussed in Sections 6.2.2 to 6.2.6. This analysis is undertaken with reference to participant variables including their sectoral background, their position within the BR spoke-and-hub governance structure, and their organisation; in addition to their understandings of what an ecosystem approach was.

6.2.2 The ecosystem approach as 'ecosystem services'

The most common participant understanding (10 of 26) was that the ecosystem approach is some form of, or relation to, the notion of ecosystem services (as per Section 2.2). Four (out of ten) of these responding participants were from a 'landscape/heritage' sectoral background, closely followed by three (from ten) from an 'ecology' background. Finally, there were one participant (of ten) from each of a 'farming', 'planning', and 'arts' backgrounds. Half (5 of 10) of these participants were from large-scale organisations (as per Eurostat - footnote 36), two were from medium-scale organisations, and three were from micro-scale organisations. Of all the four categories, the respondents considering the ecosystem approach as a form of ecosystem services were the most confident in their perspective. When this was explored by the researcher (in the semi-structured interviews) three responders were less confident of their response, and offered comments such as P25:

> 'I've heard of ecosystem services, is the approach similar to this? It is probably a way of doing things based upon ecosystem services'

or P31 who offered:

> 'If you said, 'ecosystem approach' I wouldn't know, if you said 'ecosystem services approach', then I would say that it is all to do with the services, right?'

At the other end of this spectrum, seven respondents (from ten) articulated a high degree of confidence in their perspective, such as P37 who suggested that:

> ‘An ecosystems approach is to me about being able to secure those payments for services that we really need farmers and landowners to be receiving in order to put in place the mitigation measures that will benefit wider society’.

Broadly speaking, participants in this category of response were of the opinion that the ecosystem approach was either just a different term for describing ecosystem services, or as an approach of operationalising ecosystem services. Three respondents in this category (of ten) described the ecosystem approach ‘as broadly just another form, or way of saying ecosystem services’. Similarly, some considered the ecosystem approach a functional mechanism for returning value to natural resource managers; for example, as with P37’s comment above, or in P7’s example where:

> ‘the timber value coming out of a woodland is the thing that drives it forwards; however, the real challenge with ecosystem services is trying to get money that you wouldn’t necessarily expect to be getting, and new forms of money’.

6.2.3 The ecosystem approach as an ‘ecologically constructed’ concept

As seen in Table 6.1, the second most common participant response to ancillary question one was that an ecosystem approach was a purely ‘ecological concept’ towards undertaking natural resource management (7 of 26). Although this category was comprised of diverse range of answers, these answers broadly all shared the central notion that an ecosystem approach was about land management practices congruent to ecological processes, functions, and boundaries (without consideration of social or economic dimensions). For example, these respondents discussed the concept of an ecosystem approach in terms of being ‘all about supporting ecosystem functioning’ (P4), or ‘that it should be based upon natural boundaries’ (P13), or that ‘it should focus on all species in the ecosystem and not just keystone species’ (P27).

The majority of these respondents (5 of 7) were from an ‘ecological’ professional background, with two participants from each of the ‘landscape/heritage’, and ‘marine’ backgrounds respectively. The respondents came from a homogenous collection of

organisational-scales; from large organisations (2 of 7); medium scale organisations (2 of 7); and micro scale organisations (3 of 7); with two *independent* respondents not representing an organisation.

Those respondents from an 'ecology' background (5 of 7) (broadly) considered themselves to have superior knowledge of what an ecosystem approach was, and based upon their professional background and knowledge, were confident that their perspectives were accurate. They also framed and articulated their responses in language and terminology common to the 'ecological profession', evidenced by their use of language replete with notions of 'spatial-identity', 'geography-bounded' approaches, and 'catchment-scales'. Moreover, the broad tone of response from those of an 'ecology' background was that 'ecological' professionals have primary 'ownership' over the concept and practice of an ecosystem approach. This was due to the ecosystem approach being, to their mind, about 'ecosystems', which is well utilised term in ecological practice and discourse. Furthermore, these respondents did not view the terminology of 'ecosystems' as contested or even co-owned, instead it was viewed as within the bounds of their discipline. That said, some 'ecologists' did view the ecosystems approach as a shared concept, as seen in Section 6.2.4 below.

6.2.4 The ecosystem approach as 'integrated land management'

Table 6.1 shows how the third most common participant understanding about what an ecosystem approach was, was that it could be broadly described as a form of 'integrated land management' (6 of 26). Similarly to 6.2.3, these respondents were also predominately from 'ecological' professional backgrounds (5 of 6), though one respondent self-identified from a 'local government' background. This category contained the broadest forms of response, for example, P30 saw it as:

> 'a way of managing the natural environment that recognises the links between people, nature and ecosystems. Is also makes us take into account ecosystem functions and the benefits that nature provides to people, and that we need to involve people in decision-making if we want to sustainably manage our natural resources'.

In contrast, P34 explained it quite simply as:

> ‘I take it to mean working together. It means humans working together for improving the quality of life for all humans and all other life’.

Despite the breadth of articulated responses in this category, the participants did voice a number of interesting themes. For example, in addition to considering it as an integrated management approach, P3 was keen to impress that the ecosystem approach should be used to emphasise the ‘connections between communities and individual citizens’ (P3). Alternatively P11 (in speaking back to the importance of geography) stated that:

> ‘The ecosystem approach, which is all about the holistic management of the natural environment, has got to be driven from a geography’

In another answer, P10 highlighted that they had ‘been on a journey to the current understanding of the ecosystem approach’, from ecosystem services to an integrated management approach.

6.2.5 Conception of the CBD-articulated ecosystem approach

As Table 6.1 highlighted, those participants articulating CBD-aligned conceptions about the ecosystem approach were the lowest number of respondents (4 of 26). These respondents were substantively from ‘ecology’ professional backgrounds (3 of 4), with one from a ‘planning’ background. Interestingly, two respondents held positions in the BR ‘hub’ governance structure (e.g. 2 of 4). That said, the comprehensiveness of respondent conceptions of a CBD-aligned ecosystem approach varied. Two participants offered generic, but well-rounded answers about the CBD, one participant referenced efforts at implementation across multi-level governance (1 of 4), and one participant commented on the genesis of the CBD leading to the emergence of the Malawi principles (1 of 4). Other participants added further nuance. For example, P18 noted how he and his organisation had been engaged with the CBD since the inception of the ecosystem approach, and had, in fact, supplied a case study to the ecosystem approach sourcebook (as per Section

2.6.1). Similarly, P9 articulated how an in-depth knowledge of the ecosystem approach had been critical to his professional career as an international environmental consultant. P9 further expressed how the opportunity to put an ecosystem into operation was one of the primary rationale for his joining the BR when it was re-formed as a 'modern biosphere reserve' in 1997.

6.2.6 Additional outliers of understanding

Outside of the four main characterisations of understanding lay three other descriptions of what the ecosystem approach was (as in Table 6.1). Considering the divergent opinions expressed in these three responses, and the relatively poor confidence with which they were expressed, they were viewed as outliers to the main body of responses (as per the thesis of Allison, 2001). This was not to suggest them inconsequential or unworthy of analysis (as per Miles and Huberman, 1994:269). Indeed, their unique perspectives were considered contextually in understanding what the whole cohort considered an ecosystem approach to be understood as (e.g. Salkind, 2010). The three outlier responses suggested that the ecosystem approach was:

- A derivative or proxy for the Lawton report outputs (1 of 26);
- An entirely 'landscape scale' concept (1 of 26);
- Something that they had no knowledge of at all, and 'could not offer a guess as to its function' (1 of 26).

These three outliers were interesting insomuch as they contributed towards the general sense of divergent opinions on what an ecosystem approach was understood to be. This broad range of opinions was what was expected under *ecosystem science* (which has been introduced in Section 2.7 and is discussed later in Section 6.4).

6.3 Discussion about what implementers considered an ecosystem approach to be

6.3.1 What is ecosystem approach, conceptually?

It has already been established that Chapter Six seeks to reveal the issues relating to how an ecosystem approach was understood and interpreted by its street level users within the case study (supported contextually by those national-scale participants with a similar implementation remit). Comprehension and interpretation is the critical first stage how weak policy-notions might be implemented at the street level. With this in mind, thirty participants (30 from 40) offered an opinion on what they considered an ecosystem approach to be. The principal finding from these respondents was that there was little consensus of opinion/interpretation about what the ecosystem approach is (as per Table 6.1). Participant opinions varied significantly, from not knowing at all and not being able to offer an answer (P33), to giving descriptions of the Malawi principles, the CBD and its institutions (P9), and the key arguments surrounding the ecosystem approach (P18). Thus, the broad characterisation of what participants thought the ecosystem approach can be described a 'varied'. Whilst some participants offered theoretical understandings of what the CBD ecosystem approach was (4 of 30); and other participants offered practical definitions of an ecosystem approach, such as P11 who suggested that:

> 'I see it as an approach, or paradigm, for tackling management problems for a specific area. If the principles adopted are being used to manage the temporal scale, spatial scales and externalities it gives you a list of criteria that you can start to use for managing a region. Hopefully, in the right kind of way, in a holistic way'.

Congruent to the assertion of Lawton and Rudd (2014), the largest individual group of respondents confused the ecosystem approach with ecosystem services. Moreover, these respondents were the most confident in defending this definition, with some describing it as the 'ecosystem service approach'. Despite some uses of the term 'ecosystem service approach' in literature (e.g. Barkman et al, 2008; Garcia-Llorente et al, 2012), hearing participants describe thusly might be to the irritation of Scott et al

(2014:11) who have suggested that an 'ecosystem service approach is conceptually inarticulate' (sic). For example, P31 stated:

> "If you said 'ecosystem approach' I wouldn't know, if you said 'ecosystem services approach' then I would say that it is all to do with the services that the natural environment provides for people such as clean water or air".

That said, there seemed to also be confusion and misconception about what an 'ecosystem service approach' was supposed to be. This means that, even within this concept there was little congruence between respondents on what a 'ecosystem service approach' meant.

The significant body of responses to ancillary question one were not comprehensive explanations of the CBD ecosystem approach. Interestingly, those who did discuss the CBD were more likely to suggest that their interpretation of an ecosystem approach was generally not shared by other people in their sectors; or by other members of the BR partnership. The reverse of this was also seen. Those participants who considered an ecosystem approach as a form of ecosystem services, integrated management, or an ecological concept, were more likely to suggest that this opinion was accurate, and likely to be shared by others. Running through all these responses was a common theme – the suggestion that 'we get it', and 'others don't'. This theme was seen in recurring sentiments on how the ecosystem approach is conceptually complex, and difficult to explain to lay audiences let alone put into action. This sentiment was articulated by P12:

> "Through the training I have had I think I maybe have more of an understanding of what the ecosystem approach is. The other stakeholders I work with are using it, though more led by an implicit understanding and not an explicit alignment towards the ecosystem approach".

Participants (6 of 30) commented on how comprehension about the ecosystem approach could be aided if the approach was simplified, condensed, or turned into a process. However, none of the respondents could point towards Natural England's

(Porter et al, 2014) or Defra's (2007) attempts at simplification of the approach (e.g. Table 2.3). This finding is supportive of Fee et al's (2006) conclusion that the ecosystem approach as a policy-notion (in Canada and Germany, and perhaps 'northern hemisphere states' more broadly) had failed to penetrate to domestic local-scales; and was instead, 'stuck with its head in the clouds'. This finding suggests that, in the case study at least, attempts at promoting implementation of an ecosystem approach through weak policy instruments (e.g. Defra, 2011; Porter et al, 2014; Natural England, 2016) has not necessarily been successful. Connelley et al (2012:194-195) synthesise the contemporary critique of knowledge dissemination as the weakest of all EPI for stimulating behavioural change. Bemelmans-Vedec et al (1998) discuss these 'sermons' as having power to compel behaviour change by 'presenting the target actors with information about the implications of certain choices' (Jordan et al, 2005:318). However, this research found that only three participants could point towards any of the policy dissemination tools utilised by Defra or Natural England to deliver the ecosystem approach as a policy-notion of best practice. This finding again supports the findings of Fee et al (2006) who suggested a disconnect between national-scale efforts, tools, and instruments to promote an ecosystem approach and the local-scale users of it. Moreover, of the participants who articulated comprehensive understandings about the CBD ecosystem approach, all suggested that they had been introduced to it through direct contact with CBD or other MEA. That was not to say that an ecosystem approach was not being used or understood by participants, only that the translation of this policy-notion through the national governments preferred EPI appeared to have had limited impact. Furthermore, congruent with the conclusions of Fish and Saritisi (2015) participants broadly agreed that teaching an ecosystem approach was difficult, and it often required 'personal journeys of understanding' with support from tools and programmes. Fish and Saritisi (2015) concluded that, when comprehensively explained and taught, members of the public saw real value and benefit in an ecosystem approach. The journey of being taught about using and applying an ecosystem approach was articulated by P10:

> 'The ecosystem approach is an approach, and for a while it took me time to realise that. To start off with I thought about it primarily in terms of the

classification of ecosystem services, but eventually I started to see it as being about this integrated approach at the landscape scale'.

6.3.2 Participant critique of the ecosystem approach concept

Those participants who articulated opinions of what they understood an ecosystem approach to be, also offered two main critique about the concept of the ecosystem approach as a policy-notion. Whilst a majority of participants (24 of 30) considered that integrated natural resource management is 'challenging' (congruent with Bellamy et al, 1999), these participants considered that the ecosystem approach was perhaps more difficult again to put into operation. Chapter Two highlighted the efforts that Defra, Natural England, and others (e.g. NEAT) have undertaken to try and facilitate greater comprehension and use of an ecosystem approach in England. However, only three participants expressed knowledge of the Defra ecosystem approach principles, and all were vague on what they were, and how to use them. As above, this finding speaks to the inefficiency and low-impact of the EPI selected for the delivery of an ecosystem approach as a policy-notion in English natural resource management settings.

A small number of respondents (5 of 30) commented on how integrated, *systems*-based approaches to land management were difficult to operationalise under the contemporary system of UK governance. As noted already in Chapter Four, and as articulated by Russel and Jordan (2009) there are valid reasons for a siloed mode of governance and government in the UK. However, five other participants articulated how they were wary that this siloed nature would continue to prove a stumbling block to an ecosystem approach in England. Three of the national-scale participants went further and suggested that the root of this problem with implementing a *systems*-based ecosystem approach lay in the UK's penchant for highly specialised education and training provision. These three respondents suggested that this specialisation-focus produces specialists, and not the generalists needed to interdisciplinary thinking. For example, P23 saw that:

'I worry that at any level the integration is hindered by an education system and by professional institutes that creates specialists. All the specialist professional

institutes champion their own professions and you rarely see them coming together to speak their own language'.

Certainly the challenge of specialisation may be less evident in the BR which both seeks to employ generalists as well as train a next generation of generalists (e.g. through the schools programme - as suggested by two participants). However, the overarching national educational framework of specialisation will potentially continue to stymie the training of multi-disciplinary systems generalists needed for *systems*-based approaches.

6.3.3 Conclusions to 'what implementers considered an ecosystem approach to be'

Ancillary question one sought to better understand what participants thought the ecosystem approach was. The literature had suggested that varied interpretations of the policy-notion might be a substantive barrier to implementation (Section 2.9). Congruent with that, the results of this first ancillary question broadly concur. Table 6.1 displayed the breadth and depth of variation of interpretation within the case study participants, and broadly categorised responses to ancillary question one in four categories. Table 6.1 also showed how there was substantial confusion between the concept of an ecosystem approach and ecosystem services, which supports the high-level assumptions of Lawton and Rudd (2014). It also found a broad narrative theme in participant comments which suggested that 'they' as insiders tended to think they could understand an ecosystem approach, but that other 'outsiders' would find it too challenging. This perceived difference between 'the public' and 'us, the experts' is returned to in Chapter Seven as it pertains to knowledge utilisation and decentralised management. Importantly, the results of ancillary question one suggested that the ecosystem approach as a nationally originated policy-notion has not had a substantive or marked impact on the thoughts, considerations, or behaviours at the local-scale. This finding supports the conclusions of Fee et al (2006) who have suggested that in some countries the ecosystem approach does not successfully penetrate below the national governance scale. In this case the findings suggested that the cause of this was in part due to the failure of the weak EPI selected (by Natural England and Defra) to deliver the ecosystem approach in English natural resource settings. There is a

small literature critiquing the utility 'knowledge dissemination' EPI as effective instruments of policy delivery (Jordan et al, 2004; Connelley et al, 2012), and the findings of this research offer an original contribution towards this discourse. Five participants also suggested that the ecosystem approach was a policy-notion that was 'bound to struggle' (P17) due to its intrinsically *systems*-orientated approach was fundamentally mismatched with the intrinsically-siloed nature of government, and indeed, the entire UK education and training system which bred specialists and not generalists. Overarchingly, participants expressed opinions on what an ecosystem approach was, and why they were trying to put it into practice in the BR. This point established a platform upon which Chapters Seven and Eight could be constructed.

Critically, ancillary question one found that participant understandings about the ecosystem approach is could be characterised as 'confused'. The state of confusion about what an ecosystem approach is supports the thesis of other scholars (e.g. Scott et al, 2014) who have suggested that the complex entanglement of concepts and terminology in ecosystem science is driving the *implementation deficit*.Thus, the ramifications of these findings upon the notion of *ecosystem science* is undertaken next, in Section 6.4.

6.4 Findings relating to the concept of *ecosystem science*

6.4.2 Why study *ecosystem science*

Sections 6.2 and 6.3 articulated how within the sample there was found to be significant variation of opinion about what the ecosystem approach was. This finding broadly supported the notion of *ecosystem science* (as outlined in Section 2.9). Whilst certainly this breadth of understanding might have been a side-effect of the ecosystem approach's situational and context dependent nature (e.g. different individuals consider it inconsistently because it is utilised variably to meet changing situations). However, as noted by other scholars (Scott et al, 2014; Waylen et al, 2014[A]) this breadth of interpretation might also be a detrimental phenomenon, where the real and tangible impact of an ecosystem approach as a concept for transforming and structuring integrated management practices might be being diluted. Of critical importance to this thesis, where there is inconsistent understanding about what an

ecosystem approach is conceptually; that, in turn, might be fundamentally effecting how it is understood and interpreted at the street level by these final implementers. If comprehension is the first step towards translating and then implementing weak-policy notions at street level, then understanding the dynamics affecting and driving how the policy-notion is comprehended is important. Thus, there is a rationale for further studying the results relating to *ecosystem science*; and indeed this thesis goes further by presenting original findings that speak to the fundamental nature of the relationships within *ecosystem science*.

The existing *ecosystem science* literature suggest that this phenomena is manifested comparatively between the managers of designated sites (e.g. horizontally between designations and projects). In this way, it is concluded (by Scott et al, 2014) that this phenomena is a systemic sector-wide challenge (e.g. the natural resource management sector). However, the results of this research show that this phenomena (*ecosystem science*) is also manifested vertically, within a single case study. This might be important because it suggests that not only do different designated locations and projects have different understandings of what an ecosystem approach is; but that, in this case within each of these designations there is no general consensus of interpretation and understanding. Moreover, these findings suggested that the lack of general consensus of interpretation was broader than envisaged by other comparative studies (e.g. Lawton and Rudd, 2014; and DeLucia, 2015). These other studies tended to consider *ecosystem science* a duality between competing notions of 'ecosystem services versus an ecosystem approach'. Section 6.4.2 presents findings that show this duality to still be important, though it is not the complete picture.

6.4.2 Confusion with of ecosystem services

The findings of this research showed how in this case study the most significant confusion in interpretation lay between those who considered an ecosystem approach as either meaning (or a proxy) for ecosystem services; and those who considered it a term to broadly describe integrated management practice (and those who interpreted it as something akin to the CBD-conception). This duality supports the thesis of Lawton and Rudd (2014 who suggested that these two concepts were the easily confused and competitive. The ten participants who (in this research) considered the ecosystem

approach to be a form of ecosystem services broadly articulated comprehensive understandings about the concept and practical applications of ecosystem services. That said, these ten respondents articulated mixed feelings about whether ecosystem services were a broadly positive or negative way of 'framing natural value'. Whilst a majority of them (8 of 10) articulated the positive 'messaging' value in ecosystem services (in terms of engaging the general public), opinion was mixed on the broader underlying benefits of framing natural value in terms of ecosystem services. Some of these respondents were sceptical of the anthropocentric valuation philosophy running through ecosystem services (5 of 10) and articulated what might be considered broadly post-structuralist critique. For example P24 who stated:

> 'The government do use ecosystem services, or should I say those particular services that they are comfortable with and have the right tools and frameworks to use and buy into and reinforce their narratives. Government have an economic growth narrative and therefore they are favouring market based instruments in particular'.

On the other side of this argument, P23 highlighted the utility in framing natural values in terms of ecosystem services, where:

> 'If you link management decisions to jobs, employment and social welfare then politicians can work with that more effectively than they can with species'.

Overall, whilst these ten participants articulated some value in framing natural value in terms of ecosystem services, they remained conflicted on whether, on balance, the idea of ecosystem services was a force for good or ill. For example, P3 spoke about how:

> 'I am a little Jekyll and Hyde about the whole ecosystem services thing because I think that is very important for us to understand the all the different things that nature does for us and which increases our fluency in understanding the things that nature does for us and that can only be a positive thing. The bit I am concerned about with ecosystem services is that it may lead to purely

monetised value of the environment which completely ignores the intrinsic value of biodiversity, the social value of biodiversity, all of those things.'

However, despite the conceptual misgivings about ecosystem services, eight of the ten respondents could point towards practical, positive, and valuable iterations of 'ecosystem service thinking' in practice. These included the 'upstream thinking project' (e.g. D10; P10, P16, P26), the 'mires project' (D1; P10; P35), or the ecosystem service restoration work being undertaken at Holnicote (P29). Within these ten participants there seemed a substantial difference between their instinctual distrust of the concept of ecosystem services, and their acceptance of practical applications of ecosystem service thinking. Critically however, seven of the ten participants also commented (in various forms) how, 'whatever their feelings on the subject', ecosystem services were being driven by policy into practice anyway.

6.4.2 *Ecosystem science*: a 'positive or negative state'?

In fifteen of the semi-structured interviews there were conversations about the nature of *ecosystem science*. The limited *ecosystem science* literature has thus gar somewhat stymied any critical empirically-based discourse on whether *ecosystem science* is a positive or negative phenomena (in terms of enabling implementation and operationalisation); and instead uniformly assumes it a negative influence. The results of these fifteen conversations with participants offer an opportunity for such a discourse. Across the fifteen conversations it was seen that respondents marginally (10 of 15) considered *ecosystem science* as a negative phenomenon; a smaller number (4 of 15) considered it a positive phenomenon; and a smaller number again considered *ecosystem science* both positive and negative (3 of 15) (note: a small number of these respondents offered both positive, negative, and mixed perspectives).

6.4.3 *Ecosystem science* as a 'positive state'

Four participants (from fifteen) articulated how the wider state of *ecosystem science* had a net positive effect on implementation of an ecosystem approach. This means that the confused and contradictory state that exists between the different concepts and practices is in some way a beneficial state. These four respondents considered

this a positive effect based upon the 'adaptability' and 'inclusivity' that the confused state of *ecosystem science* offers to the ecosystem approach.

Both P6 and P12 commented on how the different terms and concepts within *ecosystem science* can mean many different things to different people. This was seen as being beneficial (for the use of an ecosystem approach) where it can be used to adaptively, and opportunistically to suit different unique integrated natural resource management situations or problems. Indeed, P6 and P12 suggested at its heart, the ecosystem approach should be considered as interpretative (a point well-articulated by most respondents and supported by these findings), and therefore adaptable to many situations. Thus, the 'pick and mix' approach to Malawi principles, appropriate to different situations (e.g. endorsed by Defra, 2011) becomes a boon to implementation. P12 was keen to comment on this point:

> 'It gives adaptability, and you have to be able to adapt it to unique circumstances that you find yourself in'.

Moreover, as P6 commented, by not being a strict definition of terms the ecosystem approach does not 'rule itself out of any situation', and instead a 'pick and mix' use of the principles can suit nearly any integrated management problem. That said, if natural resource managers (e.g. its potential users – see Hartje et al, 2003) do not know about the ecosystem approach principles, then despite the adaptability it may not get used to suit all these many and varied problems. Thus, the benefit of adaptability is contingent on the ecosystem approach's visibility; though it should also be noted that many of the Malawi principles are normative to natural resource management regardless of practitioners thinking that they are 'using an ecosystem approach' or not. Indeed, practitioners might use aspects of an ecosystem approach regardless of whether they think they are using an ecosystem approach or not, simply because these principles are 'good practice' across a number of environmental management approaches more generally (Waylen et al, 2014[A]).

Based upon the notion of adaptability two other participants (P3; P30) commented on how *ecosystem science* might act to drive greater inclusivity into the use of an

ecosystem approach by being different things to different people. In turn, this inclusivity may be acting as a driver of implementation. Wallington et al (2007) note that inclusivity is a key element in contemporary partnership based management. Wyborn (2011) goes further and suggests that inclusivity is a critical feature in contemporary partnership based, landscape-scale management. Wyborn (2011) further notes that this is especially true of landscape-scale management partnerships within landscapes of highly disaggregated land ownership, such as the land between the moors. Thus, the inclusivity of a plastic ecosystem approach might be well suited to structuring the integrated management of the BR at the landscape scale. This was articulated in D1, where the biosphere reserve management plan states 'An ecosystem approach to development is directly relevant to the Biosphere Reserve and requires consideration of the environment at a landscape scale'. P30 (a national-scale participant within Natural England) highlighted the value of inclusivity in driving integrated management and the ecosystem approach:

> 'It is to the benefit where people can see how it is relevant to them and what they are going to do. But, it has meant that this is necessarily difficult to use it to challenge people on what they are doing because they can say 'well by my definition I am doing it already' or 'well by this definition it has nothing to do with me'.

P30's comment is incisive in drawing out both the positive and negative consequences of *ecosystem science* as a driver of inclusivity. The ecosystem approach offers a 'pull factor' where its conceptual-breadth allows people to imagine its relevance to them for a variety of situations. It also presents a 'push factor' that can similarly present many opportunities for individuals to say why it is not relevant to them.

The arguments that inclusivity and adaptability are the positive effects from *ecosystem science* suggest that this state may not be exerting a uniformly negative influence on implementation of an ecosystem approach, as suggested in the literature (e.g. Scott et al, 2014). This may be the case, as long as the use of ecosystem approach under these circumstances remains 'outcome focused'. Fish (2012) raises this point and suggests that ultimately the language may be immaterial, so long as the approach

used leads to positive results. In this way, the state of *ecosystem science* is immaterial and instead of focusing on it, the focus should be on the results of the approach undertaken (whatever that is). This finding speaks to the discussion about 'ends' and 'means' articulated in Section 2.2. P3 agreed with this point, and suggested that:

> 'The ecosystem approach is a holistic approach and not a reductionist one, it is not something that is easily definable in itself and that therefore I am more relaxed about people taking a varied interpretation of it I think getting hung up on definitions doesn't help get things done on the ground'.

This is a point well made, that in the outcome-orientated conservation context, definitions are only useful so long as they lead to positive outcomes and so it is not worth exercising too much energy worrying about this (as per Fish, 2012). However, the second part of this same comment from P3 leads to the important counter argument:

> 'I would only go so far in that of course, if people start talking about a new programme to get all managers of SSSI's up to scratch and called it an 'ecosystem approach' – I would feel obliged to bring them up on it, because it would not be that'.

These four respondents thought that *ecosystem science* was only a 'positive force for driving implementation' (P12) so long as practical iterations of an ecosystem approach did not stretch the policy-notion out of recognition. Where this line of demarcation lay however (e.g. stretching the term away from its normative meaning) was not raised by the four respondents. This was despite multiple questions with participants to try and identify where this line lay. As an example of how the term 'ecosystem approach' could be stretched out of all recognition P28 (answering a tangential question) talked about how 'I once came across a sausage factory that claimed that it was an example of doing 'an ecosystem approach'! Thus, the language that is used to describe an ecosystem approach is important (as per Fish and Saritisi, 2015), and identifying what is and is not an appropriate interpretation of an ecosystem approach remains an important point of discourse. Certainly, natural resource management should be

'outcome-focused', though this focus should not come at the expense of allowing the underlying concepts and theoretical policy-notions become contorted out of recognition (as spelled out in Helm, 2000 regards 'sustainability'). Therefore, in conclusion, four participants suggested that *ecosystem science* may have positive effects on driving use of an ecosystem approach. That said, there were more substantive comments raised on why *ecosystem science* was probably acting to detriment the implementation of an ecosystem approach.

6.4.4 *Ecosystem science* as a 'negative state'

Ten participants responded to the notion of *ecosystem science* by suggesting that this state of misconception and confusion was negatively affecting the likely implementation of an ecosystem approach in practice within the BR. Furthermore, the opinions of these ten participants criticising the state of *ecosystem science* were amenable to categorisation in terms of its effect on 'competition', and its effect on eco-cultural 'appropriation'. These two critique of the state of *ecosystem science* are addressed next.

The nature of the relationships between different policy-notions within *ecosystem science* remains contested. Scott et al (2014) considered these relationships to be facilitative in nature (e.g. the use of one policy-notion reinforces the use and consideration of others). Other scholars however (Lawton and Rudd, 2014; DeLucia, 2015), consider these relationships to be zero-sum in nature (e.g. the use of one policy-notion is to the detriment of the others). The findings of this research found that, by a large margin of consideration (4 comments to 10) respondents considered *ecosystem science* to be exerting a negative effect on implementation of an ecosystem approach, and that the nature of the relationships between policy-notions lay at the heart of this phenomena. These ten respondent comments agreed with Lawton and Rudd (2014) in considering the nature of the relationships to be zero-sum, or competitive in nature. Eight of the ten respondents to this point broadly considered that that these different policy-notions (within *ecosystem science*) were competing for political patronage, funding, and consolidation in policy and legislation. As noted in Section 2.9, there is a small literature articulating the competition between national policies (e.g. Bjorvatn and Eckel, 2006) as well as policies within discrete fields (e.g.

Radaelli, 1999; Stewart, 2012; Cotton, 2013). Although these studies tend to be framed through 'competitive policy narratives' (e.g. Sabatier, 2007) the results of this research suggest that this competition can also be seen through competitive policy-notions within *ecosystem science*. For example, three of these respondents commented on, what they considered the clearly competitive relationship between the policy-notions of an ecosystem approach and natural capital (e.g. P9; P28; P31). P3 and P7 ruminated on how this competitive relationship was perhaps part of a wider philosophical discourse on the contemporary political patronage given to market-based solutions (to environmental land management) at the expense of what they considered 'traditional' approaches to conservation. The literature suggests that the ascendancy of 'market-based solutions' (e.g. Gomez-Baggethun et al, 2009) to integrated management practices may have been at the expense of 'other approaches' (Zhang, 2013). Therefore, in conclusion to the negative 'competition' aspect, eight participants considered that the nature of the relationships within *ecosystem science* were competitive, and not collegiate. This finding supports the contention upon which Lawton and Rudd (2014) conducted their analysis. Considering this competitive state within *ecosystem science*, two participants commented on how therefore the ecosystem approach had 'lost' this competition to other policy-notions. Critically, this was a common subtext to many participant interviews, but it was only explicitly discussed by P3 and P9, and so it is not considered a substantial finding of this research, but perhaps a subject for further investigation.

As noted by six (of ten) participants *ecosystem science* can also detriment implementation of an ecosystem approach where its plastic and interpretative nature makes it a term that is susceptible to eco-cultural appropriation by other policy actors and agenda (Worthman, 2016). The idea that policy-notions can be appropriated by other policy actors, and then turned to suit their interests has precedence in the environmental management literature (see Helm, 2000; Atkinson, 2000). Indeed, three (of six) of the respondents noted the appropriation of sustainability as an example of the kind of appropriation the ecosystem approach might be subject to. These comments came from the two participants with a public 'planning' background (P2; P5), and another participant with a professional interest in the planning process (P1). These three participants were keen to highlight the appropriation of sustainability

potentially had similarities to an ecosystem approach. Illustrative of this, P5 suggested that:

> *'*Sustainability is a concept which could be mis-appropriated to suit particular ends, and, in our opinion, it is being so. The ecosystem approach is a fragile concept which means it is at risk of being mis-appropriated and its meaning changed over time to align with other outside interests and political agenda*'.*

These three participants suggested that the appropriation of sustainability was being facilitated by three drivers. These drivers were a) the non-prescriptive nature of the 'national planning policy framework'; b) the persistent push through the 'national planning practice guidance' towards what P2 named as: 'call it whatever, just build more houses*'* (UKGOV, 2016) and; c) the overt national and local political pressures applied to planning officers. Other participants discussed (in tangential conversations) the 'appropriation of sustainability' as being driven by a) the *austerity* agenda (P1; P5; P13), b) the national and local housing crisis (P2; P15), or c) that it was the logical outcome of unsustainable actors and activities attempting to launder or green-wash the perception of their image (P3). Whichever of these drivers and facilitators is more accurate, the read-over to the ecosystem approach was striking. Both the ecosystem approach and sustainability are weakly described and enforced policy-notions that seek to describe holism and complexity. However they are both potential targets for eco-cultural appropriation by other political interests seeking to add a veneer of sustainability or holism to their un-sustainable or un-integrated practices. Some participants suggested that such an appropriation of the ecosystem approach is unlikely, such as P2 who suggested that:

> 'Sustainable development and its principles have been appropriated, clearly, by certain interest groups though I think we are a long way off that happening for the ecosystem approach because there are other driving forces in environmental planning and management with new bits of jargon, like natural capital, which mean that in a sense we are not putting all our eggs in one basket and saying the ecosystem approach is everything'*.*

Despite P2's suggestions that appropriation is unlikely to happen to the ecosystem approach policy-notion, P1 and P6 were more sanguine and considered that this represented a real threat to the ecosystem approach. P24 responded to the threat of appropriation by saying:

> 'I think that does pose a threat because I do worry about the uncritical use of the ecosystem approach/ecosystem services framework/natural capital. They are all thrown around willy-nily by people who, quite frankly, should know better'.

If the kind of appropriation that has captured sustainability can be used to capture the idea of an ecosystem approach, then this could devalue and erode the impact of an ecosystem approach to integrated environmental management. The findings of this research suggest that appropriation of an ecosystem approach is a real risk, and it is a policy-notion that needs championing (as argued by Waylen et al, 2014[A]), though ultimately this appropriation risk is both facilitated and exacerbated by the state of *ecosystem science*.

In summary, there were substantially more participant comments relating to the negative aspects of *ecosystem science*. There are clearly potential benefits to *ecosystem science* in terms of inclusivity and adaptability. However, this research found that the competitive nature of *ecosystem science* coupled to the risk of the ecosystem approach concept being appropriated meant that, on balance, the state of *ecosystem science* should be considered negative phenomena in terms of promoting and enabling an ecosystem approach.

6.5 Conclusion to Chapter Six

Chapter Six has sought to present findings and analysis which broadly address what participants understood an ecosystem approach to be. This was an important first stage in seeking to understand how participants might be implementing an ecosystem approach at the street level. Section 6.2 presented findings to this line of enquiry and found a range of participant opinions spread across seven categories of response,

though only the four more significant categories were considered in the analysis. There was little consistency or congruence between the responses in these categories, and the general level of understanding about what the ecosystem approach is, was characterised in terms of 'confusion'. This confusion was homogenously distributed throughout the sample, with confusion not just about what the policy-notion of an ecosystem approach was, but also its strength as a concept, and the perception of how it is understood by other BR stakeholders. These findings reinforce the need to 'disentangle (the) key concepts' (advanced by Waylen et al, 2014[A]) within *ecosystem science* (Scott et al, 2014), and which these research findings found to be competitive with each other (congruent with the supposition of Lawton and Rudd, 2014 and DeLucia, 2015). Thus, the findings of this Chapter have both confirmed the work of other scholars (Waylen et al, 2014[A]; Scott et al, 2014; Lawton and Rudd, 2014; DeLucia, 2015), as well as offered an original empirically based contribution to understandings of the fundamental nature of *ecosystem science*. The *ecosystem science* heuristic describes the various ecosystem based environmental management ideas and approaches that are connected through their shared confusion by their intended users. As one of the few studies to explore this dynamic in-depth, this research upholds the fundamental premise of this heuristic. This research found no consensus between natural resource managers on differentiating the ecosystem approach from other 'ecosystem sounding' concepts. Many participants understood and interpreted the ecosystem approach to mean ecosystem services, other participants that an ecosystem approach was a purely ecological term, and other participants considered an ecosystem approach related to other ideas completely.

Section 6.4 considered whether the state of *ecosystem science* had a positive or negative on implementation and operationalisation of an ecosystem approach. Although some participants argued for the value in the *ecosystem science* dynamic in terms of its 'inclusivity' and 'adaptability', a majority of ten participants (from fourteen) thought it a negative state (based upon its competitive nature, and penchant for appropriation). Thus, it is concluded that *ecosystem science* is a negative state (as alluded to in Waylen et al, 2014[A]) because it impairs the abilities of each of its

component policy-notions to be well understood, and for their true impact upon policy and practice to be realised (as per Scott et al, 2014).

This conclusion also means that evaluation of each discrete policy-notion within *ecosystem science* is made more difficult. In turn, this negative state reduced the potential for policy learning about the relative success or impact of each policy-notion. For example, whilst the *outcome 1C self-assessment* (Annex B) had the potential to be the most comprehensive, and broad evaluation of the use of an ecosystem approach in England (as per Section 2.7); due to the complexity of differentiating out an ecosystem approach in the results the self-assessment will probably struggle to draw broad evaluative policy conclusions that stimulate learning within Natural England. That said, the evaluative results of *outcome 1C self-assessment* exercise are not going to be published by Defra, and so the reality of this may remain unknown. It is surmised that a hitherto unrecognised negative effect of the *ecosystem science* heuristic is its potential to detriment policy evaluations of each of the discrete policy-notions. Section 6.4 found that whilst there is a scholarly position that these policy-notions may be mutually reinforcing towards better overall best-practice (e.g. Fish, 2012) the majority of participants thought the relationship between them as more akin to being 'competitive'. Furthermore, participants also broadly articulated the relationships between the different policy-notions within *ecosystem science* as being one where 'as one rises another falls'. Put another way, the nature of the relationships within *ecosystem science* was found to be inversely proportional. This 'nature of the relationships' was discussed by four different participants when discussing the ecosystem approach and natural capital together and comparatively. Indeed, this was discussed clearly in terms of how the rise of natural capital approaches had been as the proportional expense of an ecosystem approach. Critically, the degree to which this relationship was causal instead or correlational was also discussed by two participants who named it as causal (e.g. the 'rise' of the natural capital policy-notion had caused the diminution of the ecosystem approach policy-notion.

Whereas other scholars have taken inter-*case* approaches to studying and conceptualising the *ecosystem science* discourse (e.g. Scott et al, 2014; Waylen et al, 2014[A]) this thesis offered an original contribution to the literature by showing how this

is also a profoundly intra-case phenomena. This ‘thick’ understanding suggested that participants relationship to the concept of an ecosystem approach was that they (broadly) did not consider it framework for integrated natural resource management that they used situationally to address specific challenges. Instead, participants broadly displayed static opinions about what an ecosystem approach was that were not situational, but simply varied between individuals. This meant that the wider conceptual value that the ecosystem approach offers (e.g. situational flexibility and adaptability) have largely been ‘lost in translation’ so that participants are more likely to hold opinions on what it is that are fixed.

Most importantly, Chapter Six sought to show why understanding and interpretation of a weak policy notion (such as the ecosystem approach) must be seen as the first and critical stage on the path to their consideration at the street level. Of course for well-defined and well-articulated (and somewhat normative) SLT-style policies, comprehension and understanding is less of a concern (because they are well defined, reducing the importance of interpretation). If it had been found that (despite the weak language and policy instruments) that an ecosystem approach was consistently understood by intra-case participants, then the case for clear lines of street level connection might have been strengthened. However, Chapter Six found a wide a diverse field of interpretations meaning that whatever participants considered an ecosystem approach to be, it was likely being inconsistently implemented at the street level. Therefore, the next Chapter of this thesis moves on to presenting the findings of what was actually found being implemented at the street level within the case study.

Chapter Seven: Assessing implementation of an ecosystem approach within the case study North Devon UNESCO biosphere reserve

'There is a need for more active and explicit use of the 12 principles of the Ecosystem Approach championing inclusivity, spatial planning, joined-up governance arrangements and upfront investment in stakeholder participation and involvement. This presents significant challenges in translation to policy and decision-makers on the ground.' (Scott et al, 2014:37)

7.1 Introduction to Chapter Seven

Chapter Seven is concerned with addressing how an ecosystem approach is being operationalised within the case study. After exploring what participants thought the ecosystem approach was (Chapter Six) through the first part of the semi-structured interviews (Annex E), each participant was then shown a visual representation of the Malawi principles, points or guidance, and Defra ecosystem approach principles (as per Annex G). Through this, each participant was brought up to a common level of understanding about the CBD and Defra versions of an ecosystem approach so that they could offer opinions of the likeliness of each principles being operationalised within the BR in practice. Chapter Seven next presents the findings of how participants considered the ecosystem approach was being implemented within the case study area. As argued by Waylen et al (2014[B]) and Phillips and Joao (2017) there are potentially different formats for structuring ecosystem approach evaluations. Congruent with the analytical format employed by Phillips and Joao (2017) Chapter Seven structures its analysis around each of the Malawi principles as individual themes (with additional cross-cutting consideration given to the points of guidance). The Malawi principles are considered in thematic clusters to aid the drawing of broader conclusions (as per Fineman, 1998:957). These thematic clusters are based upon the structure of pre-set themes suggested by Korn et al (2002) (as seen at Figure 5.1)

and were utilised to show how particular principles contributed towards the more general themes of integrated management as normatively described (e.g. ecology, society, economy). These four different 'themes' (as in Figure 7.1) were also utilised to structure the initial stages of the thematic analysis (as per Tjandra et al, 2013) as they related to common threads of discourse offered by participants. Congruent with thematic analytical method, as new cross-cutting, street level themes emerged from the data, these too were explored and analysed (as seen in Chapter Eight). Thus, the use of 'themes' in which to cluster the different Malawi principles aided both the initial thematic analysis, as well as offering a tool for broadly describing the results and conclusions of this research. Chapter Seven presents and discusses the results of how participants considered the ecosystem approach was being implemented based upon the original themes (and clusters); Chapter Eight presents the results of the emergent streetlevel themes that participant data suggested might be driving implementation behaviour.

7.2 The Malawi principles

The thematic analysis of participant responses to the questions surrounding the ecosystem approach came primarily from the data of forty semi-structured interviews with context added from the nineteen documents (see Annex D), and four partnership observation sessions. Participants were questioned on each of the Malawi principles to understand their views on how each principle was considered in theory, and in practice. Within the forty semi-structured interviews all thirty BR-scale participants expressed different views on the Malawi principles. Some participants offered only a single view on a single principle, and others offered multiple views on multiple principles. Participant comments ranged from single sentence statements, to more detailed paragraphs of discourse. Participant responses tended to offer mixed collections of opinions on each Malawi principle (or theme of principles) conceptually, as differentiated to the degree to which they are being actually put into action within the BR. Therefore, each of the discursive sections below (Sections 7.3 to 7.6) presents the analysis of participant opinions of the theory and practice of the theme or principle being discussed (as per Figure 5.1).

7.3 *Social* Malawi principles

7.3.1 Introduction to *social* results

As per the descriptions of the Malawi principles (Table 2.1 in Chapter Two), and Korn et al's (2002) thematic *social* cluster (Figure 5.1), the principles analysed here are:

> Principle One. Recognise objectives as society's choice
> Principle Two. Aim for decentralised management
> Principle Eleven. Bring all knowledge to bear
> Principle Twelve. Involve all relevant stakeholders

The participants offering responses to, or comments about, the Malawi principles in the *social* theme (*n*=46) broadly expressed how all the four *social* principles intrinsically had significant cross overs and were fundamentally hard to disaggregate. Participants expressed this as especially the case with principles one and two, which they considered as being similarly concerned with the *optimal scale* for decentralised environmental decision-making.

7.3.2 *Social* principle: recognise conservation objectives as a societal choice

7.3.2.1 Findings on the *concept* of 'recognising objectives as a societal choice'

Seven different participants offered a total of nine comments on the degree to which they agreed with the concept of 'the objectives of conservation being a matter for societal choice' as well as the degree to which this was true in practice within the BR. These seven respondents offered five comments on the concept and four comments on the practice within the case study BR.

Participant opinion was polarised on whether 'society' and 'citizens' are conceptually the most appropriate-scale for choosing conservation objectives and delivering them in decision-making (as opposed to 'experts'). At a basic level, two respondents argued that in our parliamentary democracy 'society' is choosing conservation objectives anyway by selecting representatives when they vote for political party manifestos at the ballot box. Illustrative of this, P24 suggested that: 'decisions are subject to societal

choice already where decisions are made through a representative democracy'. Whilst this was a valid comment, it was also a somewhat simplistic interpretation of the UK parliamentary democracy. Indeed, as Bäckstrand (2006) has shown there can be democratic deficit between the stated environmental intentions of political parties (at the ballot box) and their actions when in power. This democratic deficit was a point raised by two other participants (P8; P12) who questioned the connection between ballot box voting and direct local environmental decision-making. Following further questioning, a majority of these respondents felt that parliamentary democracy did not represent a valid societal forum for deciding environmental decisions about priorities (P13 was outright hostile to this notion).

There was a split of participant opinion on the essence of principle one, about whether 'society' (read as individual 'citizens') (P1; P19) or 'experts' (P13; P35) were conceptually the most appropriate group for choosing conservation objectives. Both P3 and P32 questioned the conceptual rationale of why 'citizens' (and society at large) should be 'choosing' objectives at all. Congruent with Irvin and Stansbury (2004) and Schultz et al (2011), P1 and P35 questioned if 'citizens' are the most appropriate scale and for setting and choosing conservation objectives within biosphere reserves in particular. These opinions can be seen in P32's comment:

> 'Assuming that decisions are a societal choice implies a democratic choice which we don't think there should be. We think it should be government dictating concern and protection for the natural environment. Certainly, people should value the environment and elect politicians who take concern for this, but decision-making should not be grass-roots up'.

The divergent participant opinion on the concept of societal choice was part of wider theme that ran through the results about the utility and value of decentralising natural resource decision-making power. The UN Food and Agriculture Organisation's (2017) decentralisation of decision-making power in terms of being 'the process through which authority and responsibility for some environmental functions are transferred from the central government to local governments, communities and the private sector'. The notion of environmental decentralisation is supported by the 'subsidiarity'

principle which is, essentially, that decisions should be taken by governance actors at the scale most appropriate to the problem (e.g. Malawi principle Seven – Table 2.1). The philosophy of natural resource decentralisation is contemporarily viewed as an important and normative ingredient in 'good' natural resource governance practice and has been endorsed by the majority of MEA and institutions of global environmental governance.

7.3.2.2 Findings on how the principle of 'conservation as a societal choice' was being put into practice in the case study.

Four participants offered comments on whether the principle of 'conservation as a matter of societal choice' was being operationalised in practice within the BR. Only one participant felt that the principle was being operationalised in practice within the BR and three participants felt that this was not the case due to challenges of stakeholder engagement, operational buy-in from partners, and a lack of policy levers to facilitate any/further decentralisation. P13 described this in terms of:

> 'In theory we would like to see more decisions being made by members of the community, but in practice this would just tend to self-select the same old faces which would somewhat defeat the point'.

Three participants discussed how the 'levers that citizens can pull' (P5) to express their 'societal choices' about conservation decisions were inadequate to the task. That said, both P2 and P5 did discuss this in terms of the new 'North Devon local plan' (D19) and the process of the planning inspectorate as offering opportunities for citizens to influence conservation decisions within the BR (P1). In tangential discussions about other points, the notion of societal choice affecting decision-making was raised. For example, both P11 and P33 suggested that there was scope for the local community to influence the BR in choosing conservation priorities through the BR schools programme, community forums, parish council meetings and other 'outreach activities'. Although participants were broadly optimistic about the BR schools outreach programme to affect next generation behavioural change, they also spoke about its shortcomings in influencing current conservation priorities within the BR (e.g. P33). This critique was not aimed at the work of the BR outreach programme,

only its potential to meaningfully affect change in the short-term. There was a tacit acceptance that the schools programme may affect longer-term change, but that this would likely be a cultural change that would be difficult to measure and witness an effect from (e.g. P18; P19; P34).

7.3.3 *Social* principle: aim for decentralised management

7.3.3.1 Findings on the *concept* of decentralised management

Participants broadly considered that the first Malawi principle (above) was conceptually a discussion about the optimal scale for setting priorities and making decisions about natural resource governance. This discussion was considered more explicitly in relation to principle two: 'aim for decentralised management'. Batterbury (2006) suggests that the decentralisation of power and decision-making is an internationally-originated phenomena that is essentially concerned with rescaling and restyling environmental governance to lower functional scales. In essence this is a discussion about where power resides, and whether disaggregated power to lower functional governance scales leads to 'better' environmental and social outcomes (Oosterveer and Van Vilet, 2010; Faguet, 2011). Decentralised powers for natural resource decision-making are broadly viewed by the literature as a positive aspiration based upon their potential for enhancing equity, democracy and efficiency (e.g. Ribot, 2003; Reed et al, 2009; Harrter and Ryan, 2010. In many regards however it remains a contested notion. Blaikie (2006) critiques decentralised powers in terms of the disproportionate value placed upon 'community voices' which, Blaikie argues, has instead the tendency to turn into expert 'echo-chambers' of what decentralised managers 'should be saying'. Similarly, Leach et al (1999) have highlighted how decentralised community based decision-making often runs the risk of simply reproducing heterogeneously owned and controlled natural resources based upon existing community power dynamics, infrastructures, and institutions. Thus, although decentralised management has been embraced as a concept by many actors and institutions of global environmental governance, it remains a contested notion.

Prioritising decentralised management is both articulated specifically in Malawi Principle Two, as well as broad 'decentralisation' theme running throughout the whole of the ecosystem approach (Garcia and Cochrane, 2005). Six participants offered

eight comments on the concept (4 of 8) and practice (4 of 8) of 'aiming for decentralised management'. These respondents offered an intrinsic well-developed understandings of the conceptual arguments at the heart of this discourse.

Much like the findings of Andersson and Ostrom (2008) (and to a lesser extent Agrawal and Gupta, 2005) four participants expressed broad and strong conceptual value in 'engaging citizens' (and society) at large in conservation practices and decision-making. They expressed a desire for this out of a sense of ethical and moral alignment to the principle of subsidiarity (e.g. subsidiarity was, they considered, a morally just notion). That said, their support (in theory) was nuanced, with three (of four) participants expressing deeper internal conflicts about translating the principle of subsidiarity into the real and tangible actions of decentralising power and decision-making over natural resource management (e.g. P5). This was a challenging contradiction for many participants to explain, as they often saw the inherent contradiction in their own logic (e.g. support citizen engagement but support less the giving away of power). Nevertheless, participants (e.g. P14; P20) broadly expressed that whilst they conceptually wanted citizens to 'care about nature', this should not be at the price of the undue transfer of power away from *their* level of governance/power. For example, P5 commented on the decentralisation of power and responsibility for aspects of environmental monitoring within the BR from VSO's to citizens (e.g. through citizen science). Whilst this activity met many aims that might be considered laudable by the moral logic of subsidiarity, there were many concerns about the professionalism, skills, and continuity of citizens. This meant that this transfer of responsibility came with risk and that, to some, the decentralisation of powers was seen as an unnecessary and overly risky endeavour no matter the moral imperative. This meant that, whilst these three participants were ethically and conceptually aligned to the principle of subsidiarity, in practice, they found it difficult to support decentralisation when it might lead to a loss/detriment of their personal individual or organisational decision-making powers. Concerns about the loss of power by management professionals through decentralisation has seen limited discussion in the literature (e.g. Raik et al, 2007). In some participants there was a pronounced unwillingness to relinquish aspects of power over natural resource decision-making to decentralised actors. This parsimonious approach did not appear to be maliciously

based, but instead was more a function of trust and conflict. That was, participants (e.g. P14) trusted their own scale of governance (and more explicitly their organisations, colleagues, and networks) to exercise power most appropriately and felt morally conflicted about contesting the moral logic of subsidiarity. This decentralisation parsimony could be said to be untrue to the spirit of the 'principle of environmental subsidiarity' (De Antigua and Maria Ángeles Martín, 2014); and somewhat counter to the prevailing political decentralisation agenda (e.g. Gov.uk, 2010). However, a deeper exploration suggested that for two participants this parsimony was borne from the belief that their organisation is the more effective arbiters of the power they already exert. They considered that further decentralisation would be, on balance, a genuinely poor decision that might lead to a range of negative consequences (for both the natural environment, and local accountability).

Participants offered five comments on the challenges to operationalising decentralised management in the BR (and to a wider context, within the UK). At the national-scale, P31 was conflicted on whether the national decentralisation agenda (gov.uk, 2010) was 'real' at all: 'management is not decentralised under our current system, it is dictated from above'. There was similar disbelief voiced at the BR-scale where P2 expressed that: 'It doesn't feel decentralised in practice, it feels like everything is centralised with government and we have to do as they say'. On the other side of this argument, P10 (BR-scale) suggested that 'decentralisation is a 'big thing in government at the moment, and we are trying to make it work'. By way of compromise both P2 and P24 suggested that under the current arrangement national government was overtly delivering a 'decentralisation agenda', but that the delivery of this was complicated. They suggested that whilst ostensibly there was a decentralisation agenda in theory, in actuality this was being undertaken by stripping powers from regional-scale entities, and re-centralising them back to government, and to a lesser extent down to local-scale entities. Thus, they suggested the entire notion of government promoted 'environmental decentralisation' in the UK was a smokescreen for a top-down power grab, and consolidation of powers by another name. Illustrative of this P24 quipped that:

> ‘The subsidiarity or decentralisation rhetoric is distorted by the governmentality imperative and shoved up the localism sock puppet if you will [sic]. So, local organisations and people are told ‘you can have power, but only use it in the ways we want you to’.

This national decentralisation agenda might also be seen as manifested in the means through which the UK government has sought to devolve responsibility for utilising an ecosystem approach to lower scales of natural resource governance (as per Section 2.6). This means that the UK government might have devolved consideration for an ecosystem approach to lower levels of natural resource governance to stay true to its natural resource governance ‘decentralisation agenda’. Conversely, this national focus on a decentralisation agenda might also be acting as a hindrance to implementing an ecosystem approach where it tries to compel power to be decentralised below the most appropriate scale for its exercise. For example, by promoting a decentralisation agenda to a level where it is not easily understood or where there is no power to implement an ecosystem approach.

7.3.3.2 Findings on decentralised management in practice within the case study

Four participants offered broadly sceptical and critical opinions on the efforts to enact decentralised management within their organisations and the wider BR. They expressed their disquiet with existing and additional decentralised management (within the BR) through two principal themes:

- Decentralised capacities. P31 expressed the opinion that there might be a mismatch between the expectations that can be placed upon decentralised actors, and their abilities to meet their new decentralised roles. Whilst it might be expected that training and support might aid this, P2 and P31 expressed how natural resource management practice is technical, professional, and increasingly multi-dimensional. Thus, assuming that these skills are easily (or at all) translatable for lay citizens or local government is unhelpful. Furthermore, P33 made a specific point of suggesting that decentralisation is contingent upon ‘effective leadership’, and that although this had been somewhat successful in the BR so far, further decentralisation of power within the BR might struggle to

find effective leaders. P24 suggested that unavailable or ineffective 'leadership and technical capacities' might lead to decentralised 'management mistakes'. Such decentralised mistakes, though accountable to decentralised actors, may be difficult to rectify, which might even damage to concept of decentralisation itself; or worse, act as pretext to clawback funding and/or power (P24).

- Mismatched decentralised scales. P33 expressed an opinion about the challenges of mismatched scales between local decentralised governance, and the geographies of conservation designations. P2 suggested that decentralised management in the BR suffered because it was based upon geographic catchment boundaries (and thus fulfils many worthy management goals). This meant the BR boundaries mismatched against district and parish council scales of administration and governance. In turn these mismatches meant that what the BR gains in ecological coherence from matching catchments, it potentially loses in governance with different councils variably engaged with the notion (a risk articulated in Matysek et al, 2006). This mismatch of scales and boundaries impacts decentralised management. Indeed, some parts of the BR might benefit from focused management efforts at decentralised scales and others benefit less, leading to 'patchy decentralised management' within the BR boundaries (P2).

In summary, the principle of 'prioritising decentralised management' showed a significant divergence in participant opinion between the concept, and its implementation within the BR. Participants were genuinely conflicted about the concept of environmental subsidiarity, and their responses revealed a degree of decentralisation parsimony. Overarchingly participants remained broadly sceptical and critical about the degree to which this principle was being implemented within the case study.

7.3.4 *Social* principle: Bring all knowledge to bear

7.3.4.1 Findings on the concept of 'bringing all knowledge to bear'

The application of knowledge to management decision-making is a central component of taking an ecosystem approach as articulated by the third article of the CBD (see

Section 2.3.2), as well as the findings of Smith and Maltby (2003) and Pushpam et al (2008). As Hartje et al (2003) have suggested operationalising an ecosystem approach should be seen as working in tandem with adaptive management techniques (Table 2.2); which, by their very nature, are facilitated by access to and application of 'knowledge'. In practice this means the timely application of appropriate knowledge from a plurality of sources and stakeholder positions into decision-making (Fish et al, 2011).

Eight participants commented on the concept of bringing knowledge to bear on decision-making (eight comments). These participant discourses broadly focused on issues of finding 'the right balance' of types of knowledge, sources of knowledge, as well as issues relating to the validity, credibility, and appropriateness of the knowledge. Participants were enthusiastic about discussing the importance of data-driven adaptive decision-making. These eight comments discussed the concept of data driven decision-making through three distinct discourses, which offered both negative and positive conceptual points.

Firstly, P2 commented on how understanding the intersections of ecological, social, and economic systems was increasingly complex, and required a great deal of ongoing research to fill extant gaps in knowledge. As noted by P2 and P21, the BR data collection activities might be better focused towards the intersections of ecological and social data, but that this required a greater focus on interdisciplinary data collection and adaptive use to inform decision-making.

Secondly, P15 and P37 discussed the challenges of bringing all knowledge to bear under conditions of reduced funding for data collection. This was arguably 'both a challenge and an opportunity for doing data collection differently' (P34), most notably in terms of collaboration and technological innovation (P37). Interestingly, P15 mused on how their organisation might seek to increase the use of citizen science to replace paid data collection and monitoring roles and functions (congruent with Silverton, 2009; MacKechnie et al, 2011). Paraphrasing Tengö et al (2017), it can be suggested that citizen science has the potential to pull in additional sources of local and traditional knowledge (in addition to being more cost effective), which a key principle of good

practice from the perspective of the CBD (e.g. Chandler et al, 1998). However, the point of citizen science in terms of engaging local knowledge was not a point articulated by participants. Instead, they discussed citizen science primarily in terms of offsetting for reduced funding to support data collection, and in terms of the wider decentralisation agenda.

Thirdly, four participants (e.g. P3; P17) expressed ongoing concerns about striking the right balance between 'expert' and 'citizen' knowledge in decision-making. This is a well-rehearsed conceptual debate in the environmental management literature (e.g. Fischer, 2000; Bäckstrand, 2003; Hage et al, 2010). Participants suggested that the current national funding regime (e.g. *austerity*) might be decisively shifting this balance of power towards the 'citizen'. Participants articulated a sense of how the balance of power between 'citizens' and 'experts' in natural resource decision making fora was, under the current 'age of austerity' (as per Pollitt and Bouckaert, 2017), shifting towards 'citizen' voices and power over 'expert' voices and power. Moreover, the use of different sources and kinds of 'natural resource knowledge' (e.g. knowledge utilisation) is complex, and as suggested by Cowell and Lennon (2014), is as much a function of institutional setting and problem framing as application of 'knowledge'. However, this research found evidence that the inclusion of knowledge in natural resource decision-making balance might be starting to shift from 'expert' knowledge towards a greater inclusion of 'citizen' knowledge; due to changes in funding regimes, technology, and wider decentralisation agenda. Although participants (P3; P8) suggested 'expert' knowledge still held greater validity and legitimacy than 'citizen' knowledge, they considered how pragmatically *austerity* was empowering a greater reliance on citizen voices over 'experts'.

7.3.4.2 Findings on the *practice* of 'bringing all knowledge to bear' on decision making within the case study

Participants offered nine comments on how knowledge was being practically brought to bear on management decision-making within the BR. Critically, all of these participants agreed on the conceptual value of knowledge driven decision-making within the BR (they broadly considered this principle an obvious practical aspiration). That said, they all expressed reservations about the degree to which this was

happening in the BR, in practice. Six participants commented on how the challenge lay in the identification and use of appropriate knowledge. P15 and P9 elaborated on their description of appropriate knowledge in terms of the type of data available, P2 framed it in terms of the validity of the data, P10 and P13 in terms of the availability of data to inform BR based decision-making. P15 commented on the challenge of identifying and accessing rich qualitative data sources to add context and detail because historically quantitative data tended to be over-legitimised and prioritised. P2 commented on how he tried to bring all appropriate knowledge to bear to decision-making but that this could be stymied by the validity (or quality) of data sources within BR settings. The key challenges P2 and P18 articulated concerned the length of data collection period (e.g. longitudinal data), and the methodological robustness of data collection processes (P18). P15 and P16 discussed this in terms of availability of the appropriate data. In both cases P15 and P16 highlighted their concerns about the diminishing state of data collection within the BR, which is interrupting their long-term data driven management plans and strategies. As evidence of this, P15 pointed towards the disruption at the Devon biodiversity records office and suggested that further disruptions might render data driven decision-making within the BR more difficult. In summary, participants listed a host of reasons which accounted for why knowledge informed decision-making was not currently effective in the BR; some considered this about the availability, and other the appropriateness of available knowledge.

7.3.5 *Social* principle: Include all relevant sectors of society

The final social principle (principle twelve) is concerned with the 'social inclusivity' and participatory aspects of integrated natural resource management decision-making. Participatory approaches seek to make natural resource decision-making more socially inclusive, equitable, and just through inculcating the knowledge and expertise of many stakeholders in the co-design of solutions and management decisions. As noted in Fish et al (2011) an ecosystem approach should offer natural synergies with participatory natural resource management approaches. Participants offered a range of opinions on the theory (5 of 13), and practice of including all relevant sectors of society within the BR in practice (8 of 13).

7.3.5.1 Findings on the concept of 'including all relevant sectors of society'

There was a broad base of consensus on the concept of including all relevant sectors of society in ecosystem approach decision-making. Firstly, nearly all the responding participants (4 of 5) thought that the social inclusivity principle had much in common with the other *social* principles (decentralisation and societal choice). Secondly, three participants thought that, congruent with the literature (e.g. Smith and Maltby, 2003; Pushpam et al, 2008; De Antigua and Maria Ángeles Martín, 2014), social inclusivity acted as an *enabler* for decentralised management (3 of 5). Thirdly, most participants broadly agreed that there were significant differences between the theory and practice of including all relevant sectors of society; with it being easier to discuss and theorise about, than to see operationalised (4 of 5). They all agreed that the concept of including all relevant sectors of society in decision-making was a laudable aspiration (5 of 5); but that, 'finding the right balance' between 'who, when, and where' this balance should be actualised was essential. For example, an important differentiation was given by P23, who suggested that 'the critical bit is the inclusion of 'relevant' sectors and individuals'. Although all respondents articulated positive comments on the theoretical value (5 of 5), achieving the right balance of stakeholders (e.g. the sectors of society) was seen as the key to plural and inclusive; but also efficient, and expedient, management decision-making.

7.3.5.2 Findings on the *practice* of 'including all relevant sectors of society' in the case study

Whilst some participants thought social inclusivity a laudable concept a majority of participants considered that the of this principle (or participatory approaches to natural resource management) was more difficult in practice. In total, thirteen participants commented on this principle in practice, and in a majority of cases (8 of 13) these comments focused on the issue of 'finding the right balance'. A majority of these respondents (6 of 8) articulated how the 'right balance' in including all relevant sectors of society in BR decision-making was currently not being struck. P39 offered a strategic critique of the current approach being taken:

> ‘we (the BR) often don’t take a strategic approach to this engagement, and so we don’t think about ‘who do we need really need to engage, involve, or just keep informed’.

This opinion was broadly summative of the opinions of four other responses. To some of these participants this challenge was seen manifested in the lack of a clear, visible, and strategic BR ‘stakeholder strategy’. Other comments were offered about the practice of ‘social inclusivity’ in BR decision-making; and suggested that the BR was failing to properly engage with wider ‘socially inclusivity’ practice (P8; P19). As P34 emphatically articulated it is failing to engage in ways that were liable to ‘get people involved in making *actual* decisions that affect where they live!’ Social inclusivity in decision-making should be a normative and key theme running through the adoption of an ecosystem approach (Smith and Maltby, 2003). Though there are examples in the participatory natural resource management literature of designations and partnerships failing to take ‘socially inclusive’ (Cleaver, 2000; Bocoum et al, 2003), and strategic (Reed et al, 2009) approaches to inclusive decision-making. In the biosphere reserve’s defence, Schultz et al (2011) have highlighted how the lack of strategic stakeholder participatory approaches are a common concern within biosphere reserves. This literature suggests that these omissions are predominately due to a lack of awareness of the value offered by such approaches (Fish et al, 2011). In this case study, participants tended to consider that the lack of a strategic approach was acting as the principal detriment the practice of socially inclusive decision-making within the BR. There was also an understanding that this lack of a strategic approach to social inclusivity in decision-making was having a wider detrimental impact upon the other social aspects of an ecosystem approach within the BR. Two participants did suggest a potential solution to this challenge. Congruent with Grimble and Wellard, (1997) and Bryson (2004) they expressed an opinion that a ‘stakeholder identification and management register’ informed by critical analysis could act as a tool to drive greater socially inclusive and participatory practices into the BR.

7.3.6 Social theme: discussion

The empirical evidence collected in this section revealed many insights into how the *social* themes of the ecosystem approach were thought of by participants

(conceptually) and were considered as being implemented within the case study. The results suggested a clear differentiation between theory and practice. Participant discourse tended to be very supportive of the social principles in theory, but less so about their implementation within the BR. The contextual documents highlighted how the social principles were held as normative and ostensibly held in positive regard by the organisations within the BR, The critical point of contention came where participants talked on how the key to these social issues lay in finding the 'right balance', that was, in practice they needed to be nuanced. By this they meant 'the right balance' between a) the decentralisation and centralisation and b) between *social* inclusivity and preferentiality.

Participants broadly endorsed and valued the principles in theory but were reticent about aspects of their operationalisation. That said, overall, participants expressed a sense of pride in the degree to which the BR was trying to implement certain *social* dimensions to integrated natural resource management. For example, participants were keen to discuss BR projects which sought to promote *social* principles, such as the work of Beaford Arts, or the BR schools outreach programme. Four participants commented on how the particular set of *social* skills that Beaford brought had motivated them to try to include this organisation in recent/future projects (P3; P9; P27; P32). That said, despite the positive perspective some participants displayed towards certain principles, others critiqued the lack of participatory approaches and levers to affect BR governance available to the wider citizenry (expressed by participants, e.g. P8; P18; P19; P34). One of the commonest responses to questions of social engagement was a variation on the response 'if you were to ask the average person on the street here what the biosphere is they wouldn't have a clue' (e.g. P6; P9; P13; P18; P26). This finding was congruent with Coetzer et al's (2014) critique of poor brand management (Section 3.4), which is a common fault across MAB sites, making this BR not untypical in this common challenge. Illustrative of this many participants felt that both biosphere reserves in general, and this BR in particular, are poor at brand management (e.g. P6; P34). This poor brand management was seen as cyclically detrimental to the BR's ability to engage with the local public in the interests of greater decentralisation, subsidiarity, and knowledge sharing (e.g. Light and

Kiddon's, 2016:3 'Twelve tendencies for trouble'[40] in brand mis-management); as well as with policy-makers and national policy-elites.

7.4 *Ecological* Malawi principles

7.4.1 Introduction to *ecological* results

As with the descriptions of the Malawi principles (Table 2.1), and Korn et al's (2002) thematic *ecological* cluster (Figure 5.1), the principles analysed in the Section 7.4 *ecological* theme are:

Principle Three. Consider the extended impacts or externalities
Principle Five. Prioritise ecosystem services
Principle Six. Recognise and respect ecosystem limits

7.4.2 *Ecological* principle: prioritise ecosystem services

Twenty participants offered responses to the idea of ecosystem services in theory (9 of 20) and in practice within the case study (14 of 20).

7.4.2.1 Findings relating to the *concept* of prioritising ecosystem services

The near universal positive regard that participants expressed towards the concept of ecosystem services has already been explored in Section 6.3. Their positive regard was based upon a perception of simple messaging which allows for the conveying of value, or elicit expressions of value, from stakeholders and citizens. Although some participants (3 of 9) did express conceptual misgivings about ecosystem services (e.g. the financialisation of nature), the majority (6 of 9) still articulated positive opinions about the concept of ecosystem services as a tool of integrated natural resource management.

[40] Although not discussed in greater detail in this thesis the field of brand management has potentially much to impart to the MAB programme and individual BR. Certainly, many biosphere reserves exhibit good brand management practices, and others less so (as articulated in Coetzer et al, 2014). This was found in the North Devon BR, and ties into one of the key recommendations for change within the BR articulated in the conclusion to this thesis.

7.4.2.2 Findings relating to the *practice* of prioritising ecosystem services in the case study

A significant majority of participant comments expressed positive regard for the degree to which ecosystem services were being prioritised within the BR (12 of 14). Participants articulated how consideration for prioritising ecosystem services was becoming embedded in multiple different forms. For example, P2 suggested that:

> 'All the planning officers in this office are aware of ecosystem services. For example, we are talking now about strategic allocations in north Devon and we ask developers to consider taking an ecosystem services approach to the master-planning of sites. We have carried out an ecosystem services approach to one site in particular in collaboration with Natural England. So we have provided an ecosystem services framework for a large scale strategic allocation on the edge of Barnstable, we've provided a baseline assessment, and have given that, for free, to developers interested in developing the site'.

The documents sampled also supported this narrative of ecosystem services being clearly and tangibly well used in existing decision-making contexts. This includes in wider BR management planning (D1; D2; D3; D4; D5), by organisations within the BR (the NIA - D10), and in spatial planning contexts, such as in ecosystem service baseline assessments to inform planning decisions (the Ilfracombe southern extension (D7), and Westacott (D8) ecosystem service baseline assessments). Another example can be seen in the North Devon and Torridge local plan (D18) which has framed local spatial planning priorities in the language and concepts of ecosystem services. Citing both the Natural Choice (2011) and the National planning policy framework (2012) as policy drivers of behaviour towards ecosystem services, parts five to seven of the 2012 'Biosphere Reserve technical paper' (D4) highlighted the importance of ecosystem services thinking to delivering the aims of the BR[41]. Both the NIA (D10) and BR (D1)

[41] It should be noted that this document is somewhat uncritical in its use of language (i.e. the conceptual confusion within *ecosystem science*, see Section 2.2) as it verbatim requotes the conflicted statement of the National planning policy framework (2012:1.5) that 'Taking account of all the economic and non-economic benefits we get from these (ecosystem) services enables decision-makers to exercise judgement about how we use our environment. This approach is often referred to as an 'ecosystems approach'. This conflation, either intentional or accidental, is a good example of the kind of confusion about terminology that characterises the different terminology within *ecosystem science*.

management plans discuss their ecosystem service framing, and in the case of the NIA, ecosystem services are seen as a means of connecting local communities and citizens with the value of the natural world (as per Daily et al, 2011). Moreover, through practical measures such as education, community outreach, parish action for the environment, arts programme, and volunteering, the third overarching objective of the NIA is met:

> 'Enable communities to understand and value the role of nature in delivering a range of ecosystem services, through active participation and engagement.'

Thus, ecosystem services (Malawi principle five) are, according to the NIA, a concept that are enabling and facilitating of *social* inclusion (Malawi principle twelve). Similarly, the entire BR periodic review (2015) (D3) was framed within an ecosystem service context. This included an ecosystem service baseline survey based upon the template from the NEA (p33), community and expert perspectives on the state of individual ecosystem services (p34), and the explicit connections between ecosystem services with policies in the BR strategy (2015).

In summary, the findings of this research suggest that ecosystem services is a concept that is broadly supported by participants (with some important misgivings – see section 6.3). Moreover, it was found that the BR is broadly and comprehensively operationalising ecosystem services for framing the value of their work, for connecting people to the environment, and in planning contexts. This was the only principle that participants found to have significant positive convergence between the theory and practice within the BR. This is not to suggest that ecosystem services is a concept and practice well known by citizens within the BR (as per Fish and Saritisi, 2015), or that it has permeated to all levels of environmental and public governance (as discussed in Russel et al, 2014). As noted by P4:

> 'Everyone is getting on board with the idea of ecosystem services, it's easy to explain and people tend to 'get it' which makes our lives easier'.

7.4.3 *Ecological* principle: recognise and respect ecosystem limits

Section 7.4.2 highlighted how participants broadly expressed a high level of regard for the concept and practice of ecosystem services within the BR. Critically however, ecosystem services are predicated upon ecosystem processes that function within natural limits (as per Section 2.9.2). Thus, both understanding that there are limits to ecosystem functioning (which impact the delivery of, abundance, and quality of services, e.g. Loreau et al, 2001), as well as respecting these limits in management decision-making is important. Twelve participants offered conceptual (seven) and practical-BR (nine) comments about the principle of recognising and respecting ecosystem limits.

7.4.3.1 Findings relating to the *concept* of recognising and respecting ecosystem limits

A majority of participants articulated how the concept of recognising where ecosystem limits lay was important (10 of 12). Similarly, a majority expressed their positive regard towards the ambition of respecting these ecosystem limits (9 of 10) in decision-making. For example, P5 suggested that 'no one disagrees with this principle', or P13 who suggested that 'most reasonable people would agree with this*'.* That said, a minority of participants (2 of 12) suggested that they did not understand or relate to the concept, such as P15 'what does principle six even mean?' Across the participants there was a good level of conceptual understanding about and recognition of the need to respect ecosystem limits.

7.4.3.2 Findings relating to the practice of recognising and respecting ecosystem limits within the case study

Despite the overwhelming positive regard for the concept of recognising and respecting ecosystem limits, a significant majority of participants discussed it in terms of being operationally challenging to implement (9 of 10). This was a near complete reversal of opinions from theory to operation. Despite P21's sole conceptual critique of the principle's weak and interpretive language ('all ecosystems function, they just may not function as they did 100 years ago') the majority of participants identified how

the most significant challenges for the delivery of this principle occurred when trying to put it into operation (P5; P13; P27; P32).

These concerns about operationalising this principle are not new. The literature suggests that understanding ecosystem limits at the operational level, their boundaries, and tipping points, can be incredibly data intensive (Laurence et al, 2011; Kitchin, 2014; Kelly et al, 2015) which can often act as exclusionary to domestic-scale natural resource partnerships. That said, Ulanowicz et al (2013) suggests that availability of data is only part of this challenge. If there not accurate models that account for the complexity of ecosystems through operationalising data then this can pose more fundamental challenges to respecting ecosystem limits in decision-making. This challenge has led to many models and frameworks of ecosystem functioning being proposed (Loreau, 1997; Loreau et al, 2001) though they remain largely data-input intensive. Moreover, much of the contemporary research in this field is interested in understanding and locating the 'ecosystem tipping points' that maintain functioning (Mooney et al, 2009; Laurence et al, 2011). The data intensity required for understanding of ecosystem functioning was a point identified by three participants, for example P13 commented on how:

> 'Quite a lot of science is needed to understand where these limits are, and for it to carry real value there needs to be really long-term planning'.

The second part of P13's comment was particularly interesting, as it speaks to the difficulty of framing long-term strategies for management, when they are reliant upon access to long-term data (as per Hinds, 1984). Thus, accounting for ecosystem limits can be contingent upon access to appropriate long-term data which can often be too challenging a prospect for insecure and precarious natural resource management partnerships. This particular challenge to operationalising the principle of respecting ecosystem limits was commented on by P23, who was one of the creators of the ecosystem approach and the Malawi principles:

> 'Though writing principle six was a great idea at the time everyone since then has asked me 'how?'. But hey, I was a lot younger when I wrote this!'

Critically, the findings of this research suggested that within the BR, recognition of, and respect for ecosystem limits in decision-making were less adhered to than aspired towards. The majority of participants expressed how they would respect ecosystem limits better if a) they knew where they were, and b) they had the power to meaningfully influence them (7 of 9). However, on both these counts participants suggested that they only had minimal visibility and power because:

1) Although the limits to ecosystems can be geographically delineated and bounded (Sayre, 2005; Geber, 2012), these boundaries can be liable to change subject to perturbations and disruptions. Thus, recognition of where boundaries lie at any one time requires significant amounts of data collection, processing, and management, which the majority of participants were keen to suggest they have diminishing access to such data. Participants from both the marine and terrestrial environment suggested they did not have either appropriate or abundant data to be able to triangulate with confidence on the issue of ecosystem functioning (in practice).

2) Having access to knowledge and data was only part of the governance challenge. Due to the predominant pattern of land ownership within the land between the moors (small inter-generational family farms, see Chiswell, 2014), and the non-statutory nature of the BR's power (Section 3.3.4), participants were sceptical of their ability to ever meaningfully manage within ecosystem limits. That was, unless they were supported by additional agencies, powers, or policy regime change. Even then, participants suggested it would be difficult to generate the critical mass needed to affect collective behavioural changes that might supersede agri-commercial interests. Though there may be potentials for identifying eco-modernist win-win situations (e.g. positively aligned land use changes that also support ecosystem functioning activities, P3) these were few and very challenging to institute.

In summary, the principle of recognising and respecting ecosystem limits was one a majority of participants agreed with in theory. However, as with many other of the

Malawi principles, there was a differential between theory and practice. In practice, participants commented on how the lack of appropriate data about ecosystem boundaries (and ecosystem boundary dynamics such as tipping points, connections between boundaries etc), and the lack of statutory power to affect change at the ecosystem scale across this landscape meant that this was a principle that was not being well used in the BR.

7.4.4 *Ecological* principle: Consider extended impacts and externalities

The third Malawi principle suggests that ecosystem based management decisions should consider the wider impacts upon neighbouring or connected ecosystems. Based upon the intrinsic connectivity within, and between, ecological systems (Section 2.1) management decisions within one location can lead to externalised impacts upon other ecosystems in other locations and upon other stakeholders (i.e. creating both positive and negative externalities). The natural resource management literature articulates how any human intervention in an ecosystem will invariably lead to impacts and externalities as ecosystems shift out of equilibria (Crocker and Tschirhart, 1992). Thus, accounting for and minimising the externalised consequences of human-based ecosystem management decisions (or actions) is an important aspect of 'whole ecosystem management' (in the interests of not exporting negative impacts of management decisions – Arrow et al, 2000). Four participants offered comments on the concept (three comments) and practice (two comments) of considering wider externalities in management decision-making.

7.4.4.1 Findings relating to the *concept* of considering extended impacts and externalities

Participants offered three comments on the concept of considering the externalised impacts of management decision-making (or the impacts of human involvement in ecosystems). Once again these all uniformly articulated how consideration of externalities was a valid and laudable concept to aspire towards. All three comments broadly considered this a key aspect of being a responsible and conscientious manager of the natural environment; although one participant accepted that some environmental land managers may free-ride by not considering the externalised

impacts of their decisions. However, all three comments were fundamentally in alignment on the importance of considering externalities as a key *concept* underpinning contentious land management practices.

7.4.4.2 Findings relating to the practice of considering extended impacts and externalities within the case study

Two participants offered comments on how the principle of considering externalities in management decision-making was actually being considered within the case study BR. These two comments highlighted how, with all the best intentions, consideration of externalities in decision-making was stymied by a fundamental lack of appropriate 'levers' to understand, let alone engage in the management of externalities. These comments broadly considered that the work of the BR did not in all likelihood create many externalities that extended beyond the geography of the land between the moors, but for the many other commercial activities that take place there they saw little opportunity for affecting change. Certainly P5 thought the new local plan was moving towards taking account of externalities and suggested that: 'principle three is particularly important, and I'd suggest that our emerging local plan does take account of this'. P17 further suggested that the BR had come up against questions of externalities already in its response to large projects such as the Atlantic Array offshore windfarm, but that 'it doesn't feel like we have really tested ourselves against this principle yet'. Thus, it was concluded that whilst this was again seen by participants as a laudable *concept* the practice of considering externalities was not really being considered by individuals and organisations within the BR. Certainly, the findings suggested that from a certain perspective the BR can be seen as developing its own landscape-scale management approach, and in this it may eventually be better able to consider externalities (Hunt and Howard, 2015). That said, the BR is still moving towards this landscape-scale approach, and it appeared that they are not yet able to understand and affect the landscape-scale externalities from the land between the moors.

7.4.5 *Ecological* principles: discussion

The participants to this section expressed both positive and negative opinions on the concepts and practice of *ecological* principles of an ecosystem approach. This

analysis found a pattern in these relationships, where both the notions of ‘managing within ecosystem limits’ and ‘taking account of externalities’ were *conceptually* well considered, but that they were being poorly implemented in practice. The notable excpetion to this was in the consideration of ecosystem services which was seen as both conceptually laudable and practically operationisable (and was being operationalised). Thus, ecosystem services was the exception within the ecology thematic cluster, in that it was conceptually somewhat contentious (relative to the others, based upon the points of Section 6.3), but due to its ability to ‘connect people with the value of nature’ it was being widely implemented by members of the BR partnership. This was seen as being due to their translatable value and the national policy zeitgeist towards them.

7.5 *Economic* Malawi principles

7.5.1 Introduction to *economic* results

As with the descriptions of the Malawi principles (Table 2.1) and Korn et al’s (2002) thematic *economic* cluster (Figure 5.1), the principles thematically analysed in Section 7.5 are:

Principle Four. Consider the economic context
Principle Ten. The appropriate balance between conservation and use

Certainly, these two principles are not always analytically distinct from other Malawi principles and, in fact, there is the potential for significant blurring between them and the notions of ‘ecosystem services’ (Principle 5) and ‘ecosystem functioning’ (principle 6). This blurring of the economic and ecological principles through the medium of natural capital approaches is a distinctly ecomodernist construct, though as per Chapter Six its potential to confuse policy and practice evaluations must also be considered and not ignored. Despite these challenges, this Section attempts to analyse these principles separately building upon participant opinions of their conceptual value and their likely implementation in practice within the BR.

The management and use of land and natural resources has always been intrinsically connected to economic contexts (Winter and Lobley, 2009). Moreover, understanding the trade-offs for the use or protection of natural resources within land management contexts is an important function of biosphere reserves (Batisse, 1986). The field of natural capital has been seeking to build common forms and languages to better enable the consideration of the wider values of natural resource management decision-making and in markets (Ekins et al, 2003; ONS, 2017). Indeed, whilst the economic value of goods and services derived from the exploitation of natural processes and capital has always been somewhat reflected in their revealed market prices; the aim of natural capital approaches is to better facilitate consideration and valuation of the wider (non-market) value(s) of these natural resources in policy, decision-making, and in markets.

7.5.2 *Economic* principle: consider economic context

Ten participants offered fourteen comments on consideration of economic contexts in decision-making in theory (6 of 14), and in and practice within the BR (8 of 14) (as per Chart 7.1).

7.5.2.1 Findings relating to the *concept* of 'considering economic contexts'

Participants offered six comments discussing the concept of considering economic contexts. Three of the comments suggested that because fundamentally the landowners they work with are businesses (and so broadly understand economic-contexts) then discussions about land management are always conducted under the conceptual basis of considering economic contexts. Furthermore, three other participants (who worked on 'farmer engagement and support' activities) suggested that those discussing with economically-minded landowners had to cultivate a persona of being economically literate/considerate themselves; because such landowners tended to naturally consider them 'conservation-orientated' individuals. Whilst members of the BR partnership considered that they broadly understood the concept of integrating 'consideration of economic implications' into management decision-making; they also articulated how they did not think that farmers and land-owners always felt that they (members of the BR) really understood the need and reality of

considering economic-considerations in decision-making. Thus, there was an ongoing dynamic between members of the BR trying to sound and project credibility in terms of discussing economic considerations with landowners, who they felt did not always consider them to have such credibility. Nowak (1987) has argued how there are clear economic arguments for the consideration of conservation in farming practice (in addition to Knowler and Bradshaw, 2007). Although the profitability of farms aligning with conservation outcomes tends to be linked to certain variables (Pannell et al, 2014) Lalani et al (2017) have highlighted how there has been a significant shift in the wider overarching narrative of 'farming and conservation co-existing' together in recent years. Kertész and Madarász (2014) point out that although this narrative (economic value of conservation on farms) has been prevalent on the European mainland for many years, there has been a lingering narrative in UK farming suggesting that farmers could be either economic or conservation focused. That said, Kassam et al (2009) suggests that this is more nuanced, and that clearly many UK farmers and farm businesses recognise that conservation and farming success are not mutually exclusive. Three of the participant comments responding to this principle felt that being able to impart and evidence to farmers the conceptual value of 'conservation and farming working in collaboration' (P4) would offer significant value to both their work, and the wider BR programme. That said, P3 suggested that 'how farmers did or did not recognise this value was immaterial in the face of economic subsidies to encourage land use for conservation purposes'. P4 suggested that access to tools to better articulate and show to farmers the value of conservation would be welcome and might better support their ability to 'sell farmers on the concept'.

Despite this a majority of seven (from ten) respondents considered that having to take economic considerations into account in when undertaking ecosystem decision-making was something that they conceptually felt uncomfortable with. Certainly, a large majority of the participants understood the need to have frameworks through which citizens can articulate their values of nature, and through which, the value of nature can be articulated to citizens. However, much like the concerns of Gómez-Baggethun and colleagues (2009) these participants were cautious about ecosystem services being advanced as the tool for wider financialisation of nature. They considered the concept of the 'financialisation of nature' to be the start of a narrative

change that they were personally uncomfortable with. These negative perceptions about the 'financialisation of nature' appeared to be due to combinations of not understanding the structures, forms, and processes of natural capital (P4). This meant that where participants did not understand the language, forms, and structures of natural capital approaches, these may prove a barrier to their engagement with the concepts and ideas. This might be seen as a conceptual challenge back to natural capital-orientated leaders about the need to explain, convince, and 'carry along' on the 'pathway' towards natural capital approaches being embedded in the BR. Though you cannot discount the many scholars (and perhaps members of the BR) who enjoy informed but principled objections to the notions of natural capital (McCauley, 2006; Gómez-Baggethun et al, 2009). The negative perceptions of natural capital also appeared to be connected to the risk of what P3 described as the 'slipping baseline' (P3). That is, three participants expressed how natural capital approaches might represent the beginning of a process to assign values to things that cannot fundamentally be valued. As per the ecocentric rationale (footnote 2) for integrated management, this is not to suggest that these natural phenomena do not have 'value', only that assigning metrics and numbers to these values is not appropriate (McCauley, 2006). P9 expressed this as perhaps representing a more worrying trend towards natural capital becoming 'just another avenue to enclose, and then appropriate' (P9).

Critically, these negative perceptions of natural capital largely originated in individual's intrinsic values-orientations (P11; P15). These conflicts and clashes with intrinsic values-orientations were not explicitly articulated but were instead revealed through deeper discussions. These conflicts manifested as both rational (and semi-rational) critique of environmental economics, such as where P25 articulated: 'No matter what price nature is given it will always be trumped by bigger economic considerations and will always be prone to being out-bidded'; and emotional critique such as P29 who expressed:

> 'Considering the economic context, well that just seems to be opening the door to all kinds of bad things'.

These findings about the emotional/values based disquiet towards eco-modernist financialised approaches are not original, but they still hold a degree of place-based value towards the long-term introduction of natural capital approaches within the BR. If indeed antipathy towards the financialisation of nature is an (emotive) ethics-driven issue for some natural resource managers in the case study area, then it might be very difficult to convince and persuade them away from these positions through rationality alone (as per Stern et al, 1993).

7.5.2.2 Findings relating to the *practice* of considering economic contexts in decision making within the case study

Eight participants commented on the practice of considering economic contexts in decision-making within the BR. In this context the main points raised were that the practice of considering economic contexts could be further aided by tools to explore and explain; and that, fundamentally, participants considered that economic contexts are being used in practice as evidenced through a range of examples.

Firstly, participants considered that the lack of appropriate tools for assigning economic values was a challenge to the practical consideration of economic contexts within the BR. P27 articulated this from a marine context:

> 'Understanding the economic context is important, but difficult for us. This is because we work in the management of fishing activities, and both understanding and pricing the impacts of fishing on the marine environment is currently very difficult'.

Three respondents also felt that better economic tools would enable (and lead to) better management decision-making. For example, P32 suggested that: 'proper economic modelling that assigns prices to the value of nature would lead us to a better state than where we are at the moment'. Although the use of economic tools for describing the value of ecosystem management was somewhat explored by NEAT (see footnote 24), these three participants expressed the need for more substantive tools than those proposed in Scott et al (2014) (and even then they did not relate to the tools of NEAT by name at any point). Thus, these three participants concluded

their comments by expressing the ongoing need for simple, robust, and accessible tools to explain the economic cases for ecosystem management to farmers and other commercially focused stakeholders.

Participants presented a range of examples of economic considerations being considered in decision-making within the BR as evidence of this principle's use in practice. Despite the misgivings of a majority of responding participants about the concept of considering economics in decision-making the BR itself appeared to have been undertaking a significant number of economics-based trials of new economic-approaches to integrated natural resource management. From an overarching perspective, there is a 'Green economy group' in the BR governance structure which should act as the focus for many of these activities though. However, this research found that this 'Green economy group' appeared to be one of the weakest and least exercised parts of the BR governance structure. As noted the findings did reveal four innovative and ambitious attempts to reflect economic considerations in management of the BR, these are discussed.

7.5.2.1 North Devon and Torridge Local Plan

The first example to be considered is the North Devon and Torridge local plan (D18). This planning document was created by the planning departments in North Devon and Torridge regional councils and was submitted to the planning inspectorate for approval in late 2016. The document's third Chapter on 'sustainable development' attempts to inculcate the values of the BR, sustainability, and to a limited degree the ecosystem approach into planning guidance for the area. Linking to BR strategy documents (D1; D5), Section 3.3 of the local plan suggested that:

> 'Development within the Biosphere Reserve Transition Zone will be expected to deliver the Biosphere Reserve strategy's objective of demonstrating exemplars of sustainable development. Viability will not be jeopardised. Sustainable development will utilise natural resources more efficiently in its design, construction and future use. Energy and water efficient design beyond Building Regulation requirements will be encouraged as per the stated requirements found in Policy ST05: Sustainable Construction and Buildings'.

Thus, this local plan attempts to use 'sustainability' as the bridge between the ecosystem approach principles, ecosystem services, and development activities. This local plan aims to give forward guidance for developers about how to interpret 'sustainability' in this context, which is used to analyse and assess proposed developments through 'sustainability appraisals' (as described in Benson and Jordan, 2004). That said, both P2 and P5 conceded that despite this new local plan, they still only really enjoy limited powers to influence developments within the BR, because ultimately:

> 'All district council work is subject to the decision of the council and the elected members. Planning is contentious, and the elected members will always have the opinions and power'.

From the perspective of both the local planning participants (*n*=2), planning decisions are essentially advisory in nature and may (potentially) be secondary considerations to local political power and the imperatives of elected representatives. These two participants commented on how the new local plan was a similar artefact (D19). They suggested that whilst it went a long way to bridging ecosystem services, an ecosystem approach, and local planning considerations; it still remained secondary to the power of elected officials. Thus, whilst the new local plan recommended the consideration of ecosystem services and the ecosystem approach principles in economic contexts (as part of 'sustainability appraisals'), this was only advisory, and still subordinate to local political decisions (as per the challenge outlined in Elbakidze et al, 2013).

7.5.2.2 Payments for ecosystem services

The second stream of activities integrating economic considerations into management decision-making can be seen in range of payments for ecosystem services' trial projects the BR has been undertaking in recent years (*n*=8). These schemes have sought to address a number of market failures in the supply of environmental services from landowners to the consumers of the services (Wunder, 2007). The most commonly cited project (n=6) was the 'upstream thinking', followed by the 'mires project' (n=3). 'Upstream thinking' is a catchment-based project which sought to

connect improved farming practices to improved water quality at extraction. This higher quality would reduce costs for South West Water (a water utility) justifying payments to farmers for improving catchment based farming practices (e.g. livestock management in riparian zones). The participants who discussed 'upstream thinking' expressed positive sentiments about the project, which was interesting considering that some of these participants were not positive about the theory of considering economic contexts in management decision-making. There was a marked difference between participant opinions, both emotive and rational, on the concept of market-based solutions, compared to actual projects within the landscape which they participated in. Thus, both 'upstream thinking' and 'mires' appeared to offering stakeholders that were sceptical of market-based measures an opportunity to see them working in practice. Moreover, these practical examples appeared, in the limited number of cases seen here (3 of 8) an opportunity to overcome their scepticism. Both P7 and P12 suggested that such practical examples were superlative case studies for generating not just local stakeholder buy-in to the projects themselves; but critically, to the entire concept of considering economic considerations in management decision-making within the BR.

7.5.2.3 Natural capital approach

In late 2016 the BR was selected by Defra to host two (of five: 'landscape' and 'marine') UK pioneer projects as part of the new the 'Twenty-five year Environment Plan'. The new Defra strategy is based upon a natural capital approach, and through the pilot projects is going to be trialled within the BR from 2016-2018. As articulated in Section 2.9.3, a natural capital approach should represent one of the most comprehensive frameworks at integrated natural resource management practice that bridges economic and ecological considerations. Indeed, the advent of the pioneer-projects could pave the way for a far more comprehensive integration of economic considerations in decision-making within the BR. Participants were quite verbose about the idea of the pioneer project, and of natural capital approaches in general, with more than twenty-five participants expressing an opinion on it. These twenty-five responses broadly suggested a belief that natural capital approaches represent the next inexorable wave of market-based environmental management practice that organisations (and individuals) have to accept and adjust towards. Five participants

expressed clearly positive opinions about the transition towards natural capital approaches, seven responses were negative, though a significant majority of thirteen participants expressed neither positive nor negative opinions but were just 'resigned to the inevitability of it' (P10). Eight participants (from 25) saw natural capital approaches as the logical evolution of ecosystem services, though ten participants considered natural capital approaches as a more deliberative and standalone movement championed by ascendant market-based, eco-modernist thought. Four participants (from 25) were cautiously optimistic about the potential of natural capital, much like ecosystem services, to reveal and crystallise the value citizens feel from natural services. However, the over-riding opinion from participants was that they are adopting a patient expectation, a 'wait and see' approach to natural capital in the BR. Therefore, participants considered that the trial of natural capital approaches spoke to the consideration of economic contexts in practice by (and within) the BR. Although participants were somewhat reticent to accept the conceptual movement towards natural capital approaches, and even to accepting the need to consider economic contexts in decision-making, they broadly accepted its inevitability under the current political zeitgeist.

7.5.2.4 Biodiversity offsetting

The fourth stream of activity which highlighted the BR's growing consideration of economic considerations in management decision-making was seen in its trial of English biodiversity offsetting (as per footnote 32). This trial which ran from 2014 until 2016 was geographically based upon six English locations. This included three sites in Devon (North Devon BR, Exeter growth point, and the South Hams AONB). The practice of biodiversity offsetting suggests that in developments which are causing biodiversity impacts which cannot be mitigated, avoided, or restored, the additional impacts can be offset by habitat restoration on a similar site to that being lost to encourage biodiversity gain, and offset the loss. This market-based mechanism for conservation has been endorsed by the CBD (see Bull et al, 2013), is common practice in many countries around the world (Maron, 2015), and the UK government have sought to trial it in England (Kirsop-Taylor, 2015). Eight participants commented on this trial within the BR, and broadly suggested that (after three years) they remained sceptical about offsetting in practice (P13; P26; P37). Although one offsetting

development project has taken place within the BR, an offset with culm grassland, the trial was generally poorly taken up by developers from 2014-2016, and this included the BR. As noted, seven of eight responding participants were sceptical of the theory underpinning biodiversity offsetting, and seven participants were also negative about its potential to positively impact upon conservation practice within the BR. As a means of critique P26 gave an example of how offsetting had not been successful in Taw Torridge estuary:

> ‘The estuary has been under constant target to develop into a marina for decades. The last attempt was 18 months ago, and it was turned down on environmental grounds because the developer wanted to build on a salt marsh that is there. They did try to initiate a biodiversity offset to get around this and wanted to give a piece of land farther down the estuary again to offset the damage but it wasn’t comparable and so the plan failed. In short, the environmental quality at this new site was not the same as we have here’.

As described in Sections 7.5.2.2 - 7.5.2.3, participants expressed a significant undercurrent of scepticism about market based solutions. Of these different solutions being trialled within the BR, biodiversity offsetting attracted the most critique. What separated biodiversity offsetting from the payments for ecosystem services trials however appeared to be the lack of successful projects that stakeholders could engage with to support overcoming their scepticism. The results of this theme suggested that in this particular case there was profound scepticism about taking consideration of economic contexts in decision-making. However, this scepticism might be overcome by thoughtful and well-considered practical examples which showed both the workings of the mechanism as well as where stakeholders could play a role in it (see Kirsop-Taylor, 2015). For example, the new ‘culm grassland biodiversity offset’ (if completed) might have the potential to offer such a case study to build interest and engagement amongst the BR partnership and the wider stakeholder community.

In summary, this research found that the BR is attempting to consider economic contexts in its decision-making and in its various projects and programmes, but that

there are a number of obstacles impeding this. These were principally a reticence amongst participants to conceptually agree with the need to consider economic contexts in decision-making, coupled to the nature of land ownership patterns within the BR (small, inter-generational landholdings), which tended to prioritise economic considerations above conservation. That said, the land between the moors has in many ways been acting as an 'ecological innovator' in its alignment towards new market-based solutions (as per Diaz-Garcia et al, 2015). The findings suggested that one potential solution to building trust and engagement with these market-based ideas may spring from showcasing and engaging stakeholders in practical iterations of market-based solutions (see the conclusions of Kirsop-Taylor, 2015). It was found that the showcasing market-based solutions in practice may be able to influence how stakeholders emotionally connected to the concept of them. Thus, in this case, it might be concluded that practice supports the concept of these particular techniques. Based upon this conclusion the range of examples in practice may, in time, shift the fundamental values-based reticence held by some of the BR partnership stakeholders towards market-based solutions.

7.5.3 *Economic* principle: Balance between conservation and use

Consideration of both the economic contexts (as well as conservation contexts) in integrated management decision-making (as per Malawi principle Ten suggests that there is a balance to be struck between the 'conservation and use' of natural resources. This principles does not suggest what or where this balance should be struck, as this is entirely situational; though the principle of striking a 'balance between conservation and use' is one that chimes significantly with the purposes of MAB (Batisse, 1986). Six participants offered eight comments on this principle, which included three comments on the theory of a conservation-use balance, and five comments of the practice of this within the BR.

7.5.3.1 Findings on the *concept* of 'striking a balance between the conservation and use' of natural resources

Three participants offered positive responses to the concept of striking balance between use and conservation. However, at a macro scale two participants highlighted an incongruence between policy and practice. They suggested that whilst government

tended to say that 'finding a balance' was a priority, in reality, this always meant conservation being valued far lower than economic imperatives. Thus, although they agreed that the concept of a conservation-use balance was laudable and aspirational, if a 'current balance' existed at all, then it was fundamentally skewed towards the use of natural resources over their conservation. Once again, this finding speaks to the fundamental challenges articulated by the field of political ecology (Eckersley, 2004). Two participants felt that 'striking this balance' was complicated by competing and 'special interests' (P6), and that the voice of nature is more often missing from discussions about where the balance should lie. Whilst certainly proponents of natural capital approaches argue that their approach seeks to redress this 'lack of nature's voice' in striking the right balance (Daily, 1997; Ekins et al, 2003), other scholars are less convinced of its potential to do so (McCauley, 2006). One participant thought that under the current public *austerity* conservation was even more likely to lose out in considerations of balance (P5). Once again the results suggested that participants agreed with the concept of a 'conservation-use' balance, but that this endeavour was impaired where the 'defenders of nature's interests' in such governance discussions only wielded soft-power EPI and second tier legislation which impaired their interests in striking a sustainable balance.

7.5.3.2 Findings relating to striking the balance between conservation and use in *practice* within the case study

Participants offered five comments on the practice of striking a 'conservation-use' balance within the case study. Arguably, other biospheres reserves within WNBR enjoy greater power and control over the 'use-conservation' balance through a range of soft and hard power levers. For example, the soft power ecotourism scheme of Baa Atoll BR (see Agardy et al, 2017), or the German Biosphärenreservate which have statutory powers to better influence the use-conservation balance (UNESCO DE, 2011). In contrast UK MAB and its biosphere reserves appear to have a comparatively weaker locus of power. This could (and in many ways should) be seen as detrimental to identifying and maintaining the 'conservation-use' balance towards genuine sustainability. However, the findings suggested that this weaker power locus might, in fact, be forcing UK biosphere reserves to become more innovation-focused in the interests of addressing the contradictions, trade-offs, and compromises that make up

the gritty reality of sustainability in practice. Five participants suggested that, although UK biosphere reserves may have a weak locus of power to directly influence the 'use-conservation' balance this has forced them to adopt more collaborative partnership styles that, through persuasion, can mobilise diffuse power and interests to affect the conservation-use balance. Furthermore, four participants suggested that the limited core funding (unlike UK National parks or AONBs) has forced UK biosphere reserves to become agile and innovative in identifying and securing sources of funding. These participants discussed this in terms of examples such as market-based instruments, shared resources, innovations in governance and others. The interviewer proposed to both P12 and P34 that perhaps these hardships were in fact acting as driving forces behind the BR's success as a 'living laboratory' with 'tough necessity breeding innovation' (P12). In both cases there was a tacit acceptance of this but caveated with an acknowledgment that this 'would only work so far' (P34), and that eventually 'hardship would break the BR, rather than drive innovation' (P12). In summary, the results found that participants agreed with the concept that there should be a 'conservation-use balance', that there is an existing balance within the BR, but that this balance is skewed towards favouring the use of resources over their conservation. Moreover, participants suggested that in practice the BR does not have adequate tools or power to substantially influence this balance, which instead more likely influenced by national-scale policy and market forces.

7.5.4 *Economic* principles: discussion

Although there are only two economic principles described in the Malawi principles, these principles attracted significant amounts of both positive and negative commentary from participants. Broadly speaking, participants were more negative about both the theory and practice of these two principles than they were positive about them. That said, this negativity was in the main informed by an acknowledgement that in the current age of *austerity* the national policy direction had shifted decisively towards market-based solutions that placed the economic valuation of nature at their heart.

A majority of participants (12 of 16) offering comments on the economic principles themselves thought the current national balance between 'use and conservation' was

significantly skewed in favour of development/use. However, a far smaller number (2 of 16) considered that a natural capital approach might, in some way, offer value in redressing the current imbalance towards use in this 'conservation use' balance. This is where the BR becomes important in this regard, where its selection as a pioneer site puts it in the frontline of trialling these new eco-modernist natural capital approaches. This trial will take the form of a tailored programme of natural capital activities, supported by programmes such as the South West Partnership for Environment and Economic Prosperity project which aims to promote and support the adoption of natural capital approaches within the BR.

The results of this research suggested that the members of the BR partnership remained somewhat sceptical of natural capital approaches and even, despite its inevitability and central position in the Defra twenty-five year Environment Plan. A number of participants spoke candidly about how their response to the natural capital approach would be to 'pay it lip service' (P3) (8 of 25). They suggested that insomuch as it does not directly affect their core business, natural capital approaches will probably be an idea that they can 'outlive', as they do not believe that its place in the 25 year plan is fixed and will be subject to political vagaries. This finding spoke to the field of policy implementation theory; specifically, the contested discourse surrounding bottom-up versus top-down environmental policy implementation (as per Section 4.2). In this case, participants suggested that the UK government is attempting to implement natural capital as a policy-notion from the top-down, much like their (2014) promotion of a biodiversity offsetting trial (see Kirsop-Taylor, 2015). However, participants articulated how significant effort was needed to shift their inherent values-orientated distrust of market-based solutions towards a positive opinion of natural capital. These participants suggested that they were more likely to view natural capital as 'a passing government fad' (P4) without the long-term commitment in policy. They further suggested that in the UK's shifting and changeable environmental policy landscape (liable to be 'exacerbated by Brexit', P18) those policy-notions grounded in bottom-up stakeholder support were more likely to have lasting impact and traction in practice, compared to those relying solely on top-down imperatives.

The conclusions that can be drawn from these findings were that, from the perspective of the BR managers, that natural capital approaches held significant promise for reconciling economic considerations into management decision-making; and certainly more so than existing formats. There were a number of critical voices both emotive and rational against natural capital notions, though the majority of participants viewed it as a normatively positive framework for reconciling economic and environmental considerations. The findings of this research suggested that the deliverers of natural capital approaches should make careful consideration of how they win the 'hearts and minds' of the intended local-scale (bottom-up) users of natural capital, to lock in social capital against political and policy changes. Moreover, they might seek to insure against a fading interest in natural capital as a policy-notion by encouraging local-scale natural resource actors to continue to promote it at the local scale.

7.6 *Dynamics and scale* Malawi principles

7.6.1 Introduction to *dynamics and scale* results

Congruent with the descriptions of the Malawi principles (Table 2.1) and Korn et al's (2002) thematic dynamics and scale cluster (Figure 5.1), the principles analysed in Section 7.6 are:

Principle Nine. Accept change is inevitable
Principle Seven: Operate at appropriate spatial and temporal scales
Principle Eight: Manage for the long-term considering lag effects

7.6.1 Dynamics and scale principle: Change is inevitable

The inevitability of change is one of the most fundamental principles of an ecosystem approach (Maltby, 2005:100), and ten participants offered twelve comments on the inevitability of change. Seven comments related to this conceptually, and five comments related to how this principle was being operationalised in practice within the BR.

7.6.1.1 Findings relating to the concept of 'change being inevitable'

Of the seven comments on the concept of the 'inevitability of change' all who commented on it suggested that this was a normative statement. That is, this was an obvious statement that *conceptually* was difficult to do anything but agree with. However, similarly to the *social* dimensions of an ecosystem approach (Section 7.3), participants thought there the key difference of opinion on the *concept* of the inevitability of change lay between 'experts' and 'citizens'. Specifically, four participants articulated how 'experts' were more likely to be accepting of the inevitability of landscape change, as juxtaposed with 'citizens', who they considered were less likely to be accepting of change.

7.6.1.2 Findings relating to *practice* of the principle of 'change being inevitable' within the case study

Participants offered five comments on the inevitability of change in practice within the BR. Three participants felt that within the BR some of these 'citizens' actually go beyond being purely antagonistic towards change and were 'actively trying to stop any change at all' (P1). This was a point raised often and strongly by those from a 'planning' background or interest (P2; P5), though there may have been a degree of sample bias where they themselves were the 'experts' being discussed. Furthermore, P2 (as well as P1 and P5) suggested that those least resistant to, or tolerant of, change, tended to be 'non-native' citizens to the land between the moors. Perhaps unsurprisingly both P2 and P5 suggested that this intolerance to change was often channelled through the planning system and could be witnessed in developments such as the failed Atlantic Array wind farm. Whilst certainly research shows that local opposition to wind farms and other large projects are multifaceted and not simply reducible to simple dynamics and demographics (e.g. Devine-Wright, 2007; Roberts and Lightbody, 2017), participants to this research suggested a common demographic was contesting the idea of 'change being inevitable'. Regarding 'non-native' citizens, Lobley and Butler (2007) have already noted how the land between the moors has been affected by significant rural restructuring in recent decades, including an influx of non-native 'blow-ins' (P10)[42]. On further questioning, three participants commented

[42] Although not discussed here in detail, the theoretical and functional differentiations between rural 'locals' and 'incomers' or 'blow-ins' are discussed in other works, such as Jedrej and Nuttall, 1995 or Woods, 2004.

on how the inevitability of landscape change was more likely to be accepted by people who had been brought up, lived, and (critically) worked in the land between the moors area as opposed to 'blow-ins'. P8 supported this supposition by pointing to the many campaigns fought against 'change' within the landscape by 'people with too much time on their hands'. This finding is interesting insomuch as it points to a particular demographic within the land between the moors whose aesthetic perception of landscape change differs from others, and who feel sufficiently politically-socially mobilised to articulate this perception. Bourassa (1991) proposed three modalities of aesthetic experience towards landscape change (biological, cultural, personal), and the findings of this study point predominately towards non-acceptance of change rooted in cultural and personal experience. This is broadly supported by other regional-scale studies (i.e. North Devon) investigating local-scale resistance to landscape change (Devine-Wright, 2007); a finding that could have significance to the rural geography literature (e.g. Rega, 2014). Whilst a conclusion that non-locally raised residents might be perceived as antagonistic to landscape change is not original (Jedrej and Nuttall, 1995); and the literature suggests that this may be more nuanced with a host of other factors such as social group (Hunziker et al, 2008) or cultural attachment to landscapes and landmarks (Hoffenberg, 2001) playing important roles. In this case simply assigning antipathy and protest towards new developments to 'blow-ins' would be lazy. These 'antagonists towards change' within the land between the moors might be comprised of other, more nuanced demographics tied to cultural connectivity, social group, and wealth playing roles.

Three participants (P10; P11; P26) highlighted other dynamics which were driving general perceptions towards the 'inevitability of change'. P11 noted how the statutory nature (and landscape character) of many UK conservation designations is driving a sense of timelessness in landscapes that is entirely contrived (for example: see the controversy surrounding the designation of the 'Lake District UNESCO World Heritage Site'. Monbiot, 2017). Black and Wall (2001) have argued that individuals within such landscapes are less accepting of the inevitability of change. This tension between preserving the character of designated landscapes (even if this is a man-made state) with calls to allow and accept 'change' was echoed by P10, who works for Exmoor National park. P10 and others (P26) discussed how this impasse might be overcome

by the new interest in *rewilding*[43]. This advocates for certain managed landscapes to be allowed to return to semi or fully 'natural states'. Although the movement for *rewilding* is only having a marginal impact on UK conservation designations at present (Rewilding Britain, 2017), it could, in time, move some statutory and non-statutory projects-designations toward significant change in their landscape character (Brown et al, 2012; Pereira and Navarro, 2015; Olwig, 2016). Moreover, Pringle (2017) has suggested in time *rewilding* may even potentially become a significant solution to the global biodiversity challenge (as established in Chapter One).

At an organisational-scale, all the participants, except those representing the National Trust[44] and the North Devon AONB, expressed positive conceptual positions on the inevitability of change. However, these participants (from the National Trust and AONB) expressed genuinely conflicted opinions on the concept. For example P9, a manager in the National Trust, suggested that:

> 'I think people with the National Trust say it but don't internalise what it means and when confronted with real change it causes real issues for the trust who are, by their nature, a preservationist organisation'.

The suggestion was that the National Trust, as an *organisation*, accepts the theoretical notion of change being inevitable (D17), but individuals within the Trust, and indeed elements of the organisation, still find this notion operationally difficult. This conflict was blamed on the competing internal drivers within the organisation (a preservationist

[43] *Rewilding* is a relatively new term that has far older roots in theory and practice. As per Brown et al (2012) it can be defined as*: '*a strategy for the conservation of complete, self-sustaining ecosystems, primarily involving the protection and, where necessary, reintroduction, of populations of keystone species in large, connected reserve networks'. Pereira and Navarro (2015) suggest that it has the potential to drive significant land use changes in parts of the UK (especially Wales and Scotland) and around the world.

[44] The National Trust is one of the largest and most influential environmental-landscape-preservation NGO's in the UK. It is supported by a combination of membership, land holdings, and project/commercial work (P29), and it wields a significant degree of political power (P25). Moreover, its significant size, profile/brand, and institutionalism mean that it resides largely outside regular political funding cycles and is broadly free to pursue long-term management strategies (Kirsop-Taylor, 2018). Although the National Trust only has a limited degree of landholdings within the BR, it still exerts influence and acts as a pioneer of many new and innovative approaches to land management. This study found that the National Trust is instituting its own landscape scale approach in the south west (The 'south west coastal corridor project') based upon its coastal and holdings, and that this could have significant ramifications for how an ecosystem approach is understood and implemented within parts of the BR.

driver versus an ecosystem management driver) vying for ascendency. Furthermore, P23 highlighted how 'the (National) trust is quite inward looking because it only delivers on its own land' and because all their decisions are, as P25 suggested, 'based on our value judgements really', then this conflicted nature towards change extends to its work and landscape management practices. To illustrate this point, P25 discussed the current turmoil within the National Trust over the issue of *rewilding*, and especially upland management and *rewilding*, which is a contentious issue (Hunziker et al, 2008) that divides inter-organisational opinions. Congruent with Milbourne (2013) and Clifford et al (2013), this internal conflict is symptomatic of contemporary large environmental VSOs comprised of varying interests, transitioning from a formerly dominant 'preservation' modality, to a new 'conservation' dominant modality (D17).

Four participants noted how access to data, methodologies, and metrics to able to quantify change was also a potential barrier to accepting change. P18 noted that being able to articulate actual change is powerful tool in the task of framing arguments for and against change, though this is predicated upon data collection, management and dissemination. However, P2 suggested how their (organisational) environmental change data was predominately quantitative in nature, which reduced their ability to understand the social dimensions of change. The obverse of this was also suggested, where P15 and P16 suggested that they felt constrained in making hard numerical assumptions and conclusions due to only having inappropriate qualitative data available to them. Thus, data based decision-making can stymied by a lack of data, or inappropriate data to the problem being addressed. In both cases, additional financial resources were raised (by P2; P5; P25; P16) as a potential solution to the problem; though, as P36 suggested, in many fields of integrated management there was a surfeit of data, and that was needed instead were better data management methodologies and data presentation tools.

7.6.2 *Dynamics and scale* principle: Operating at appropriate spatial and temporal scales

Five participants offered five comments on the theory (2 of 5) and practice (3 of 5) operating at appropriate spatial and temporal scales. By far the most common response concerned landscape-scale approaches acting in response to the challenge

of managing in a spatially appropriate manner. Conceptually, P8 commented on how, much like the ecosystem approach itself, the language of 'landscape' can be very ambiguous which can lead to misunderstandings and potentially conflict (congruent with Hunt and Howard, 2015). Illustrative of this, P8 commented on how:

> 'There are several different meanings to landscape, I grew up with two of these which now seem to have fused…. In truth, the term probably just means a substantial area, like mid-Devon, though this is really a nonsense as my garden is a landscape, and scale shouldn't be the defining factor'.

Both P8 and P23 noted how the interest in landscape-scale management had been growing since at least the year 2000, and that it was now a ubiquitous term in management practice. P23 suggested that adoption or alignment towards landscape scale language was given a significant push from the Lawton report (2011) and its endorsement of 'bigger, better, and more joined up' management.

Five participants suggested (in tangential discussions) how the BR is a landscape-scale management programme (D1; D10). Moreover, 19 suggested that due to its physical terrestrial boundaries based upon the Taw and Torridge catchments the BR can be said to be both a landscape scale programme and also a catchment based one. The boundaries of the BR also overlap with other governance scales, such as the Natural England Culm National character area (NCA 149). However, much like the conclusions of Brown et al (2002), three participants commented on how its misalignment with political geographies is problematic for issues of political patronage leading to funding and public governance deficits (also confirmatory of the findings of Elbakidze et al, 2013). This catchment-based, landscape-scale, approach lends itself to a variety of catchment-based management programmes; such as the 'catchment sensitive farming' project, 'upstream thinking', and the catchment partnerships of the Water Framework Directive (Natural England, 2016[C]). Perhaps one of the most important elements in landscape scale management is the ability to marshal separate and diverse interest towards common causes, often through the medium of natural resource partnerships (Hunt and Howard, 2015). In this regard, participants saw the BR as particularly successful at leveraging its existing relationships and 'partnership

architectures' (P17) into catchment-based scenarios. P3 articulated the critical need for 'dedicated staff and an actively involved partnership, as well as a culture and capacity within organisations, and the tenacity and commitment of individuals' for such approaches to be successful. The findings of this research suggested that this ability to mobilise its management partnership was potentially one of the more significant strengths of the BR's partnership model. Illustrative of this, P16 suggested that based upon the trust and non-proprietary existing relationships, the BR can quickly and decisively create new smaller, or theme specific, partnerships in response to dynamic situations or changes in policy and government focus. Thus, it was found that the BR partnership acts as a kind of 'pool of potential partners' waiting for opportunities to manifest to which they can quickly respond. Mirroring Cohen et al (1972) this finding suggested a natural resource version of the 'garbage can', in which the BR partnership is replete with 'partnership solutions waiting to find problems'. As an overarching concept however participants noted that landscape scale management remains difficult, as D10 remarked:

> 'achieving a truly joined up landscape is a long game made more complex by the fact that each of the grant schemes (to support conservation activities) works on a different set of priorities and target areas'.

Whilst the BR has enjoyed many successes in developing its landscape-scale approach, there are particular challenges raised by this landscape in particular. Most notably, the land between the moors is comprised of a patchwork of different owners and interests that makes marshalling effort difficult (as per Section 3.4), or more difficult perhaps than other landscapes with fewer stakeholders to coordinate. P10 suggested that this difficulty of multi-stakeholder engagement and mobilisation was probably exacerbated by the lack of a systematic stakeholder management strategy. Moreover, the kind of multi-partner soft power approach being employed by the BR (as per Section 3.5) runs the risk of disagreements between partnership members, as suggested by D10:

> 'Sometimes conflict has arisen between the priorities of different partner organisations. When is scrubbed up wetland potential restored culm grassland,

and when is it developing wetland woodland? There are no right answers here only decisions on a case-by-case basis in the context of the wider landscape'.

Three participants critiqued the 'hard boundaries' of landscape-scale projects because they are fixed and not reflexive to changing political, business, or environmental scales (P5; P32). Three other participants (P8; P10; P11) saw greater value in 'fuzzy' and reflexive boundaries to protected or managed landscapes (congruent with Batisse, 1990; Allmendinger and Haughton, 2009). This fuzzy-boundary attribute is arguably one the BR possesses, as it does not have its landscape-scale boundaries set in law. Thus, the BR might hold an advantage over other conservation designations where it can situationally suggest fuzzy landscape-scale boundaries to fit projects, funding, and changing geographies. This is another point which speaks to the potential agility and flexibility that the BR holds over other designations, and which should (and arguably is) best used to drive innovation and new ideas which reinforce its raison d'être as a 'living laboratory'.

Despite the many interesting spatial understandings articulated above, participants were far more sceptical of the ability to manage in a temporally consistent manner. Two participants suggested specific responses to this for the BR, but generally, participants suspected that temporally appropriate management was poorly understood by the majority of landscape managers. The one organisation to run counter to this was the National Trust who felt that their relatively secure financial nature and their large national (and local) landholdings provides them an opportunity to manage the land in ambitious ways over long time frames; this is discussed further in Section 8.4.

7.6.3 *Dynamics and scale* principle: Manage for the long-term considering lag effects

Nine participants offered eleven comments on the principle of managing for the long term. Participants offered five comments on long-term management in theory, and six comments on long-term management in practice.

7.6.3.1 Findings relating to the *concept* of managing for the long term with consideration for lag-effects

Congruent to many other principles all five participants who discussed the concept of long-term management considered it a laudable goal and aspiration. That said, the degree to which individuals felt that their organisations could manage for the long-term was a function of different variables, such as their financial security, and long-term horizon and strategy.Individual participants (speaking for their organisations) discussed how their financial security was the fundamental driving dynamic of their approaches to long-term consistent management. This was predicated on the near universal opinion (5 of 5) that governmental priorities towards different aspects of environmental management change frequently, and with them the key criteria for funding allocations. Thus, for organisations predominately reliant on government funding (i.e. the majority of non-statutory BR partnership organisations), there was an on-going drive to chase funding opportunities reflective of current government thinking which may be different to existing approaches and strategies. They articulated how this continual change in approach to management compromised their attempts at long-term planning and strategies. However, two participants commented on how those organisations with long-term plans and strategies can try to meet their strategies by subverting government funding bids to partially suit their interests. This then becomes a near constant challenge of identifying funding opportunities for short-term projects that suit government interests, creating funding applications that broadly meet the funding specifications, but at the same time being amenable to their existing long-term strategic plans. In this way all organisations in such a position, and indeed all the VSO's sampled, were to one degree or another reliant on government funding. P9 articulated this as having to 'play a game' of balancing their long-term strategic interests against the short term interests of government funding. This issue is returned to in Chapter Eight.

Participants from public sector agencies (2 of 5) expressed how their ability to carry out consistent, long-term management was compromised by the contemporary *austerity* period. They suggested that where statutory functions are given primacy, non-statutory functions are seen as less pressing, and are being given less money. This means that long-term statutory management functions are seeing a continuation

of their long-term management plans and objectives at the expense of the non-statutory management activities. In some cases these 'losers' include the closure of key agencies and functions (e.g. the Devon biodiversity records office, see Section 8.2). Perhaps the most important reduction seen by to this study is the reduction in funds being allocated to the BR itself from Devon County Council. This reduction in funding was forcing many changes upon the BR team and its functions which affected its ability to manage consistently over the long-term. This point is also returned to in Chapter Eight.

Following on from these points, only two participants discussed the practice of considering lag-effects on planning and thinking. Both P2 and P5 noted the consideration for long-term climate change effects in Chapter Three (3.11) of the new local plan (D18) which states:

> 'Northern Devon's environment can also help to mitigate the impact of climate change through an ecosystem services approach. For example, enhancing existing habitats can mitigate climate change through 'carbon fixing', including the planting of new woodlands and bog restoration'.

Beyond this document most of the individuals and organisations considered that they do not plan strategically to account for long-term lag effects, though most conceded that they should.

7.6.4 *Dynamics and scale* principles: discussion

These findings showed how participants saw a difference of opinion between 'citizens' and 'experts' on whether landscape change is inevitable or desirable. Participants broadly considered that 'experts' tended to be accepting of change (4 of 7), and 'citizens' generally antagonistic to it. Moreover, three participants (of 12) suggested that resistance to change tended to be concentrated within certain demographics, with the general local population being more relaxed about change compared to what they described as 'blow-ins'. Whilst nearly all the sampled organisations were ostensibly accepting of change, both the National Trust and the AONB were more conflicted on the principle. The National Trust participants (3 of 40) suggested that this is an on-

going area of debate within their organisation, and P29 suggested that their new strategic pivot towards nature was likely to accelerate this acceptance of change (see D17). The AONB are in a different position with their statutory landscape character nature meaning that it is structurally inclined to be less accepting of significant landscape change. Whilst certainly their participants (P15; P16) understood the conceptual inevitability of change on an individual level, they saw their professional role (as enshrined in legislation) as acting against significant and inappropriate landscape changes. This was a point of personal contention for these participants. None of these participants or organisations championed unfettered change, but felt that an appropriate balance between change and use needed to be struck (Malawi principle Ten).

A majority of participants broadly felt that they, and their organisations considered the most appropriate scales for natural resource governance and decision-making in their professional practice (5 of 5). Certainly, there were some misgivings about the boundaries of defined scales and the need to match management scales with political scales and natural scales (2 of 5). That said, there was a broad consensus that the movement towards landscape-scale management had been a positive development (5 of 5). Moreover, the BR's ability to utilise fuzzy boundaries to match operating scales to funding and projects may be a significant advantage that the BR holds over other statutory designations. Three participants talked about how this fed into a general view of dynamism and innovation within the BR (of 5), in that they could react with agility to match management scales to opportunities with greater ease than other designations. Whilst participants were positive about spatial scales being considered in theory and practice, they were far more reticent about temporal scales; and specifically, no participants thought that temporal scales were being substantively considered in the long-term management of the BR. Moreover, there was serious concern about individual, organisational, and the BR's, abilities to 'manage for the long-term and consider lag effects' under the public *austerity* agenda. All agreed the critical importance of long-term management, but that their organisational and business models meant that they were exposed to 'the variable winds of central government policy' (P8), which meant their organisations tended to operate on mismatched short-term political cycles. There was suggestion by some (P3; P7) that

long-term management plans might mitigate for this but, as discussed, it was likely to be the larger VSO's who were able to rise above the short term policy cycles to truly deliver long-term management plans and visions.This concludes the analysis of individual Malawi principles and thematic clusters. Based upon the findings presented in 7.2 – 7.6 a composite characterisation of the iteration of ecosystem approach being constructed within the BR is attempted next, in Section 7.7.

7.7 The North Devon UNESCO biosphere reserve ecosystem approach

7.7.1 Introduction to the 'biosphere reserve ecosystem approach'

In their comprehensive analysis of implementation of an ecosystem approach across over 50 international case studies Smith and Maltby (2003) concluded that it is probably impossible to find any real world examples of designated sites or projects operationalising an ecosystem approach based upon use of all twelve principles in concert and in proportion. Instead, each site or project consciously and unconsciously adopts an iteration of the twelve principles that suits their unique situation of drivers, interests, governance, geography, politics etc. This means that each iteration of the ecosystem approach is place specific, user specific, and unique to the site-project. Whilst some suggest that it is important to champion all (or a substantial majority) of the Malawi principles in the interests of driving 'good' integrated management practice (Waylen et al, 2014[A]), others suggest that it is not practical to expect that all can, or will ever be used in ant one situation (Smith and Maltby, 2003; Haines-Young and Potschin, 2008). This research found that participants agreed with the notion that practical expressions of an ecosystem approach should be comprised of variable configurations of the Malawi principles. That said, it is increasingly methodologically possible to understand the dynamic balance of Malawi principles that each project or designation has achieved or seeks to achieve (Joao and Phillips, 2017). This is important, as it allows for constructing characterisations of specific place-based iteration of an ecosystem approach being used or aspired towards, which, in turn, might allow for comparative studies. Such studies might therefore be able to

triangulate on patterns, trends, and driving dynamics of the kinds of ecosystem approaches being used in different locations or situations.

7.7.2 Malawi principles likeliness assessment

As noted in Section 5.3.8 participants were asked to suggest the likelihood that each Malawi principle was being used in practice within the BR in the interests of building a composite perspective on broad pattern of implementation. Responses to this question from participants were qualitative and narrative. As suggested in Castro et al (2010), and in the interests of building this composite characterisation, these data were subjectively transformed from qualitative responses into graded ordinal categories ('very likely' - dark green; 'likely' - light green; 'neutral' – grey; 'unlikely' - light blue; and 'very unlikely' - dark blue). Although transforming qualitative data to ordinal data brings challenges in social science research (Blaikie, 2006), there are also inter-disciplinary benefits in terms of aiding comparative analysis, and supporting the robustness of conclusions that are drawn (Morse, 2012:193-204). Participants varied in their opinions on whether each of the principles was likely to be being implemented in practice in the BR (based upon a total of eighty-four comments). These different opinions can be seen in Table 7.1 where the Malawi principles are ordered thematically according to Korn et al's (2002) thematic construct (Figure 5.1), and each category has a positive and negative score associated with it. Each Malawi principle was assigned to a likeliness category based used a subjective assessment of the qualitative discourse on the practice of each principle. This was undertaken to help construct an overall characterisation of the degree to which each principle, theme, and the overall approach is being used in this case study (similarly to Phillips and Joao, 2017). In turn, this facilitates comparative analysis between the different principles and themes intra-case, as well as potentially for comparative inter-case research and analysis in later studies.

Table 7.1 Malawi principles likeliness assessment

Theme:	Malawi principles:	*n*	Likeliness				
			Very likely	Likely	Neutral	Unlikely	Very unlikely
Social	**One.** Recognise decisions as societal choice	7		Likely			
	Two. Aim for decentralised management	8			Neutral		
	Eleven. Bring all knowledge to bear	4		Likely			
	Twelve. Include all relevant sectors of society	4		Likely			
Ecological	**Five**. Prioritise ecosystem services	13	Very Likely				
	Six. Recognise and respect ecosystem limits	12				Unlikely	
	Three. Consider extended impacts and externalities	3				Unlikely	
Scale and dynamics	**Nine.** Change is inevitable	7		Likely			
	Seven. Operating at the appropriate spatial and temporal scales	7		Likely			
	Eight. Manage for the long term considering lag effects	3				Unlikely	
Economics	**Four.** Consider economic context	10			Neutral		
	Ten. Balance conservation and use	6					Very Unlikely

Source: created by author

7.7.3 A unique iteration of the ecosystem approach

Based upon the participant opinions displayed in Table 7.1 it can be seen that participants felt that this case study BR is implementing a particular iteration of the ecosystem approach. The discursive elements underlying Table 7.1 suggested that this unique iteration was built around the unique set of circumstances, drivers, and interests that dominate in the BR, and which are discussed below. This unique iteration of an ecosystem approach has not been constructed solely as a deliberative intention, rather it is a combination of deliberative measures, existing priorities, legacies, and coincidence. That said, it was still found that the BR exhibits a unique iteration that bears characterisation and consideration. Based upon the analysis of likeliness in Table 7.1, a series of 'positive points' and 'negative points' which characterise this particular iteration of the ecosystem approach are articulated.

7.7.4 Characterisation based upon positive points

According to participant perspectives the BR has particular strengths that characterise its alignment towards an ecosystem approach. The most significant of which is its calibration towards ecosystem service thinking and practice, and this was clearly evident in the literature and comments of individuals and their organisations in theory and practice. Indeed, consideration for prioritising ecosystem services, and framing management in terms of ecosystem services, has now been embedded in management plans, planning strategies, and organisational operations. It was concluded that the BR it was 'very likely' that ecosystem services are being considered by public and voluntary sector organisations within the case study biosphere reserve, in contrast to the conclusions of Russel et al, 2014.

Participants considered that the BR evidences a consistent 'likeliness' for considering the *social* aspects of an ecosystem approach, such as knowledge utilisation, inclusivity and society focus in decision-making. Whilst the BR did not appear to be strongly aligned to any of the individual social principles, it did appear to support all of them conceptually. The data also suggested that the BR is well aligned towards landscape-scale thinking as the most appropriate scale to its management (supportive of the thesis of Hunt and Howard, 2016). This was evident in both management plans (D1; D10) and interviews with particular focus on catchment-scale management practices

(e.g. upstream thinking or catchment sensitive farming) and marine/terrestrial management interfaces.

7.7.5 Characterisation based upon negative points

The unique iteration of the ecosystem approach being operationalised within the BR can also be described through a series of negative points. That is, participants offered opinions on how individual Malawi principles were either consciously, or unconsciously, not being operationalised within the BR. The most significant *implementation deficit* of Malawi principles were, in the opinion of participants regarding in the economic themed principles. This was a curious finding, considering the weight of economic-based 'innovations' discussed in Section 8.3.2; though the discourse suggested that whilst participants viewed the BR as being an innovator of economic-based solutions, it was still highly limited in its ability to meaningfully affect the conservation-use balance within this landscape. Despite the economic innovations being undertaken within the BR, participants were undecided on whether economic contexts were being considered in integrated natural resource management decision-making by the BR itself. Participants considered these two dynamics not mutually exclusive, and felt that the BR is both acting as an 'innovator' of integrated management practices that include economic solutions; whilst at the same time struggling to operationalise the economic principles of an ecosystem approach. Whilst this finding might speak to a weakness or superficiality of the economic themed Malawi principles (in terms of capturing the full scope of economic considerations), the more likely conclusion was that, despite the BR acting as a 'living laboratory', that progress was very slow in operationalising the economic considerations to management. This conclusion might suggest that the economic principles are perhaps some of the more difficult to operationalise, or a particular values-led reticence on the part of BR partnership members. Instead, the main conclusion drawn is that, whereas consideration of economic contexts had the potential to be improved in the consideration of stakeholders (this is largely a matter of education and influencing); affecting significant change in the 'conservation and use balance' is a function of macro agri-environmental policy (P3;P6), and patterns of land management, ownership, and use. The challenge for biosphere reserves in influencing the conservation-use balance was raised by Fu et al (2004) and the results of this research

support their conclusion on this subject (as in Section 3.4). As articulated by P9, the BR has very few 'levers' from which to influence the commercial behaviour of farmers. As long as the agri-environmental policy landscape remains broadly the same (and the BR remains in its weak situation), the BR will continue to have little capacity to influence the 'conservation - use balance' within this heavily agricultural landscape. Although programmes such as 'catchment sensitive farming' or the 'Torridge headwaters project' (run by the NIA) attempt to influence farmer behaviours at catchment scale towards common goals, this is a difficult undertaking. This is made more complex by a raft of commercial, socio-cultural, land-based and ultimately individual-scale barriers (e.g. risk, cultural aversion to change, farmer isolation etc). This challenge is compounded by the non-ecosystem service ecology themed principles – consideration of, and respect for, ecosystem limits and functioning. Although participants discussed how there was broad based agreement about the theoretical need to consider these principles, BR participants were far more sceptical about the degree to which these were being operationalised. Again, whilst there might be a degree of consideration for the management of externalities, participants highlighted how the lack of effective levers or tools to affect management decisions or change to account for externalities impacted the degree to which it could be said they were being used within the BR. Finally, although participants expressed a degree of conceptual agreement with management for the long-term, the majority suggested that this was a manifestly difficult proposition based upon the inherently short-term nature of policy cycles and business. Although some organisations had devised strategies to counter this short-term-ism (DWT and the National Trust), these strategies were a function of organisation constitution and size, with the larger VSO's more likely to be able to escape having to 'play the (short-term) contracting game' (as per Section 8.3). Participants commented on how this negatively impacted their ability to consider long-term lag effects and to plan for long-term trends such as climate change, soil erosion, and flood/catchment management.

Critically, all these positive and negative characterisations of the unique iteration of the ecosystem approach being operationalised within the North Devon UNESCO biosphere reserve combine to form a series of key conclusions, which are explored in more detail in Section 7.8 below.

7.8 Conclusion to Chapter Seven

Chapter Seven has presented and thematically analysed the findings pertaining to how the different Malawi principles, and the ecosystem approach as a whole, are considered and are being implemented by individuals and organisations within the case study. From these findings it is concluded that organisations and individuals within this case study are both consciously and unconsciously implementing different Malawi principles to different degrees and that, when taken as a whole, these implementation activities could be considered to be 'taking an ecosystem approach'. Of course the BR is adopting a particular iteration of an ecosystem approach that is reflective of its unique position, circumstances, and strengths/weaknesses. Whilst it was shown to have been implementing (to various degrees) all of the social aspects of an ecosystem approach, it displayed a quite variable consideration of the ecological aspects, with special attention being paid to the prioritisation of ecosystem services. Whilst it only displayed consideration of certain elements of the scale and dynamics theme, its consideration of economic aspects appeared weak, despite making significant progress in recent years to try and better align itself with new market-based projects.

The findings presented in Chapter Seven were based upon a series of pre-constructed themes (around the Malawi principles and points of guidance), but as subsequent readings of the data were undertaken (as per the thematic analysis method) new cross-cutting themes driving implementation at the street level emerged from the data. These new emergent and broad themes concerned how the dynamics of implementation at the street level within the case study were different for individuals and organisations. These key characteristics that were driving each of the three emergent themes are presented and discussed in detail next, in Chapter Eight.

Chapter Eight: Street level forces affecting implementation of an ecosystem approach

(Researcher question): What are the main contemporary forces driving you and your organisation to consider these principles in practice?
(Response from Participant Three): We want to consider them in practice but it's complicated, some are easier than others and all we can do is try to consider them every time we instigate new projects

8.1 The ecosystem approach at the street level

The analysis of participant discourse relating to the individual Malawi principles in Chapter Seven found that within the case study different principles were being variably implemented. Whilst some principles were being implemented conscious of them being aspects of an ecosystem approach as a policy-notion, other were not, and their implementation was either coincidental (based upon them being good-practice regardless of an ecosystem approach) or was not happening at all. As Chapter Seven concluded the thematic analysis of the data incrementally evolved from a focus on the pre-set themes, to a series of new emergent themes which appeared to be acting as driving forces behind implementation of Malawi principles (and an ecosystem approach). Chapter Eight presents and then discusses these three emergent themes through a SLT framing. It was found that these themes were fundamentally predicated upon the constitutional natures of the implementing organisation (i.e. public, and voluntary constitutional natures) as well as the broadly defined 'size' of the organisation. The key division between these three themes was found to be organisational, between the public and voluntary sector, and between the broadly 'larger' and 'smaller' VSO's. Thus, it was seen that there were distinct cross-cutting themes driving implementation behaviours at the street level specific to the public sector (who are classical SLB), 'smaller' VSO's, and 'larger' VSO's; a division that supports the thesis of Milbourne (2013). Chapter Eight makes a claim to these three emergent themes being broadly street level in nature. This claim is made where these

three themes concern implementation dynamics at the final policy-practice interface that are (or have the potential) to drive partial or interpreted forms of the Malawi principles (and an ecosystem approach). However, the rationale for a wider and broader conceptualisation of an iterative SLT framing needs further clarification and justification. This broad and non-specific conceptualisation was required and justified so little was known about the specific conditionalities of ecosystem approach implementation at domestic project scales in England; though the fundamental contours of this implementation puzzle still pointed towards a broadly considered street level phenomena. This non-specific, yet ultimately still iterative approach towards utilising a SLT framing may be considered logically incoherent, but the combination of the underlying contours of the implementation puzzle coupled to the broad conceptual approach taken is not incoherent, from the perspective of a sensitising strategy approach described in Chapter Five (Bulmer, 1954; Morse, 2005; Faulkner, 2017). Whilst this study might have been given greater iterative validity if stricter definitions of the street level dynamics had been employed (e.g. Tummers & Bekkers, 2014; Thomann & Sager, 2017) these might have come at the expense of being openness to the various forms and articulations of street level behaviour that might have been witnessed in this relatively unknown fora. Indeed, the results of Chapter Eight (as will be shown) have led to a number of important new understandings about the limitations on the discretionary abilities of bureaucrats towards weak policy-notions under public austerity, and the increasingly tighter locus of control evident in public-voluntary contracting relationships. Both of which make original contributions to SLT and have ramifications that potentially enhance and advance the canon and discourse of contemporary SLT (Kirsop-Taylor & Russel, 2018).

8.2 The North Devon public sector: implementing an ecosystem approach under the shadow of *austerity*

8.2.1 Broad responses from the North Devon public sector

This research engaged a number of participants (14 of 40) from public sector agencies and organisations based within the BR, or who worked within the BR, and who were

minded to consider or implement an ecosystem approach. This was comprised of individuals representing various public organisations. These included larger public councils, as well as the regional representatives of national public agencies with an interest in natural resource management within the BR. These fourteen participants offered sixteen comments that spoke to how they were interpreting and seeking to operationalise aspects of an ecosystem approach in practice within the BR. These participants spoke broadly about a number of avenues for their consideration of aspects of an ecosystem approach in their professional practices. Two participants talked about how the new local plan had allowed public servants to take aspects of an ecosystem approach and weave it into the new local planning guidance document, though this was overtly through the language of sustainability and ecosystem services. P5 also commented on how they had worked to try to build as multi-disciplinary a team environment as possible in the interests of inculcating a 'multi-disciplinary environment open to ecosystem approach thinking'. They discussed how certain Malawi principles were easier for public sector individuals to consider in their professional practice. Most importantly was the 'consideration for ecosystem services' which appeared to be a comparatively easier principle to consider according to the two planning officers (based upon the local plans heavy use of ecosystem service language). Although these public sector participants commented on a number of dynamics affecting their ability to implement aspects of an ecosystem approach the most significant, by a very wide margin, were comments about the current age of public sector *austerity* that they were working under. The theme of *austerity* appeared to play the most significant role in affecting the degree to which public sector participants could take discretionary consideration of aspects of an ecosystem approach. This *austerity* dynamic is explored and then explained in this context.

8.2.2 *Austerity* explained

In 2008 the global financial sector suffered what Burleigh, (2017:9-10) considers the most serious event in nearly a century. Over the last nine years governments around the world have sought policy responses to counteract the economic downturn and return their economies to growth. In some cases this has forced countries to adopt drastic fiscal measures to counter recessionary forces. One of the most impactful (upon public sector agencies) policy responses to this crisis was government induced

fiscal *austerity*. The logic of *austerity* suggests that in times of crisis and reduced tax receipts, reduced public spending can lower the public finance structural-deficit thereby reducing debt repayments. Although cutting public spending is seen by many economists and policy makers as more effective than simply raising taxes in a recession, it remains contentious (Stieglitz, 2012; Piketty, 2014). Although *austerity* policies have their political and economic champions, they also attract significant critique in terms of being economically illiterate (Boyer, 2012) morally indefensible (McKee et al, 2012; Brand et al, 2013; Ridge, 2013), detrimental to UK life quality (Buck and Maguire, 2015), and perhaps no more than a cover for wider 'small state' political aspirations of certain political actors (Schafer and Streeck, 2013).

In response to the 2008 financial crisis, the UK coalition government (2010-2015) instituted a programme of public sector *austerity*. Defra is a comparatively small department within the UK government (Institute for government, 2017) but it has seen significant budgetary cuts (through *austerity*) of 29.9% during the coalition Parliament (2010-2015) (HM Treasury, 2015[A]); and by a projected additional 15% by 2019 (HM Treasury, 2015[B]). From a political ecology perspective this is unsurprising as the environment has always been second tier or 'low politics' governance consideration and indeed Wright (2016) suggests that the *austerity* cuts have markedly reduced Defra's abilities to carry out aspects of its remit. In turn, these budget cuts have led to significant 'trickle down' cuts to the funding of natural environment agencies that Defra supports, such as the Environment Agency and Natural England. As the primary public funding agency in the English environmental management policy subsystem, Defra directly and indirectly financially supports a range of organisations, projects, and businesses involved in protecting the environment and agriculture. Concomitantly, UK central funding for local government has fallen during the *austerity* period from 2009 to 2017, meaning many discretionary natural resource management projects and programmes have faced severe curtailment if not outright closure. This reduction in core funding to public and voluntary natural resource management organisations at the street level has significantly impacted upon public bureaucrats abilities to consider aspects of an ecosystem approach.

8.2.3 *Austerity* at the street level in the biosphere reserve

The research findings suggested that the effects of national government *austerity* have been felt in the core funding for many participant public organisations in the BR. This included the AONB, Natural England, and the Environment Agency. This reduction in public funding was also found in terms of reduced 'trickle down' (or discretionary) local government funding impacting organisations including the Devon Biodiversity records centre (as per Section 7.2.5), Beaford Arts, and the BR executive team who have faced cuts to their core funding from local government. Under *austerity* (2011-2017) Devon County Council has seen its funding fall 'by 64% in real terms with savings of just over £208 millions having been made' (Devon County Council online). Public participants talked about how *austerity* was driving a number of negative dynamic outcomes at the policy-practice interface (i.e. the street level). Overarchingly, this meant that the public participants felt that *austerity* had been decreasing their individual (and organisational) autonomies to make discretionary decisions towards weak, non-statutory policy-notions.

A number of participants (8 of 40) from a number of public organisations and agencies commented on how *austerity* was driving changes of behaviour in what they will, or will not, fund or implement. These participants commented on how in times of reduced budgets, public agencies (such as theirs) would tend to retrench towards funding and fulfilling their statutory functions. This means that their *individual* and *organisational* abilities to exercise autonomy in discretionarily funding (or supporting 'in kind') non-statutory projects were weakened. The reasons given for this retrenchment were a worry that if they were not seen to be fulfilling their statutory functions, their budgets could be further at risk; and that the activities of fulfilling these statutory functions are more easily defensible, as opposed to non-statutory, discretionary activities. At the street level within the BR this meant a reduced availability of public funding, and especially locally-orientated discretionary spending for projects or programmes which public servants overtly or covertly wanted to support. For example, it was found that the AONB used to operate a discretionary fund to support projects or ideas that they found particularly appealing or innovative (and the participants suggested this often included supporting 'ecosystem approach-like' projects). But this fund has been steadily reducing under the *austerity* years to the point that it is now largely defunct. Another example is Beaford Arts who were the recipient (for 'many years' P17) of a

publicly funded contract from Devon County Council for senior civil servants on 'art retreats' within the land between the moors. This discretionary spending had now been substantially reduced, meaning that Beaford had lost a significant amount of its local-public funding, and had had to respond accordingly (see Kirsop-Taylor, 2018)[B].

Seven participants (P2; P14; P16; P31) commented on how *austerity* was driving an intensification of the 'revenue generation' narrative within public sector agencies as a means of offsetting budgetary cuts. Whilst a degree of this might be expected under decades of new public management (Kettl, 2005), participants suggested that *austerity* was 'supercharging this revenue generation' agenda (P18). Four participants were disquieted about the intensification of this agenda (P4; P5; P16), especially where it put their agencies into conflicts of interest with other organisations that they once worked with non-competitively. This meant that they felt that under this agenda they were expected to be competitive against other organisations (who they previously had 'partnering' relationships with) in the interests of driving their revenue generation activities. Three of the participants feared that this undermined their neutrality in the policy subsystem, and jeopardised relationships that agencies had built up over decades (P2; P11; P14). Certainly, two participants were excited about the opportunity for being more 'commercial' in their outlook, and to perhaps open up competitive markets to new public entrants. Broadly, however, the majority of participants were unhappy about having to make public agencies more revenue generating focused (five of seven), as this undermined their position and put them in compromising positions regards partnership working (as per Tizzard, 2017). Critically, this situation was viewed by participants as negatively affecting their abilities to make discretionary street level decisions to align towards aspects of an ecosystem approach because, once again, the majority of Malawi principles are not concerned with 'revenue generation'. Therefore, because these organisations were now having to increasingly focus on 'commercial opportunities' and 'commercial value-added activities' this was reducing the abilities to exercise discretion towards the non-commercial aspects of the Malawi principles. Certainly, three participants talked about the potential cross-overs (as per Section 7.5.2 - payments for ecosystem services schemes etc). However, broadly, participants considered the Malawi principles and the revenue generation agenda to be antagonistic.

Three participants talked about the effects of *austerity* in terms of general workplace upheaval and unrest. They described individuals and departments being forced to rationalise services and spending. P26 noted that whilst there might be some value in this upheaval (in terms of 'driving new efficiencies'), broadly, this was seen as 'unnecessary rearranging of deck chairs' as P8 suggested. Two participants explored how this upheaval meant a near constant realignment of service delivery, making their ability to make discretionary choices or decisions towards aspects of an ecosystem approach in their practice highly unlikely. P14 described how they were now just 'too busy figuring out what we are supposed to be doing now' to think about an ecosystem approach.

8.2.4 Implications of findings about *austerity* at the street level

There is an emerging literature describing the effects of *austerity* on public service provision (Lowndes and McCaughie, 2015; Johansen et al, 2015), though this contains little understanding about how public *austerity* may be affecting the discretionary use of weak policy notions by bureaucrats (Alden, 2015; Crossley, 2016). Speaking to this literature, participants discussed how pre-*austerity* they had far greater funding to discretionarily patronise ideas and projects that they saw as innovative or laudable. However, all the public participants highlighted how, broadly, 'austerity has changed everything' (P11). These findings suggested that *austerity* was a hegemonic force dominating public sector considerations of non-statutory policy-notions. Living 'under the shadow of *austerity*' (as P27 articulated) did not remove the potential for discretionary street level decision-making, but it appeared to significantly reduce the 'space' in which discretionary decision-making towards weak policy-notions could be made. The rationale for this being that under *austerity* public sector agencies were too concerned with post-rationalisation re-configured departments, the drive for greater marketisation of their services, and retrenching towards core statutory functions at the cost of discretionary spending towards projects and parties delivering an ecosystem approach. This finding has implications for the wider street level literature. If *austerity* is not a politically motivated discrete 'period' that will be reversed once a new government is in power but is, in fact, the new wave of fundamental realignment in the public sector (as alluded to in Pollitt and Bouckaert, 2017). If this is case, then these

changes might bode ill for those weak policy-notions which have historically relied on the discretionary 'good will', values, and coping strategies of individual bureaucrats in conflicted street level settings. This scenario might suggest a fundamental shift in the power of deciding which weak policy-notions are being promoted by public bureaucrats. In this way a*usterity* may represent a shift in the locus of power, from the local public bureaucrat with discretionary spending/power to patronise their preferential policy notions, to a far tighter national elites and policy-makers. This finding speaks to the CBD and other actors in MEA and global environmental governance. If the logic by which weak *type 2* regime were expected to gain a degree of traction with domestic public bureaucrats can no longer be relied upon to deliver regime effectiveness (or if this has shifted), then the logic by which regime designers seek to promote domestic implementation might have to be re-calibrated. In other words, if *austerity* has compressed street level 'spaces' for discretionary consideration of weak *type 2 regime* by public bureaucrats, then this might represent a new 'drag factor' affecting domestic *regime* implementation and effectiveness.

8.2.5 Conclusion to *austerity* affecting street level implementation

Public sector respondents (and voluntary sector participants affected by it) were keen to talk about how *austerity* had been affecting their ability to make discretionary decisions towards non-statutory policy-notions, such as an ecosystem approach. These participants talked about being too busy facing major shifts in their professional space and roles to consciously consider the use of an ecosystem approach. Although there were indications that some individuals (P5) might still be taking unconscious consideration of the Malawi principles; the subtext to most of these interviews were of harried civil servants more 'concerned about what was coming down the road' (P31), 'offering value for money' (P2), and 'retrenching to statutory purposes' (P14), than considering a policy-notion that they 'were no longer receiving any signals from higher-up to consider' (P5).

It was concluded that *austerity* was putting a significant strain upon public sector workers to the degree that their ability to support and champion (or interpret) non-statutory policy-notions, such as the ecosystem approach, was severely curtailed. These participants considered that an ecosystem approach to management was

conceptually very important, however, in the face of reduced discretionary spending, and a focus on commercialisation and rationalisation, that it might 'fall by the wayside' (P5). Moreover, with *austerity* induced rationalisations leading to the retirement or redistribution of key staff with knowledge of the ecosystem approach, the institutional memory needed to reignite interest in the ecosystem approach once (or if) *austerity* ends, appeared to be at risk (as per Waylen et al, 2015). Three participants discussed how the longer *austerity* went on for, the less likely it was that the ecosystem approach would survive as a policy-notion with traction and value to public-sector agencies. In summary, participants suggested a correlation between the length of *austerity* and the likelihood that weak non-statutory policy-notions would survive in institutional memories and practices. Certainly, individuals championing an ecosystem approach may go some way to offsetting this, but if only if given adequate space and leeway to do so.

In a similar vein to Ellis (2011) and Tizzard (2017), three public sector participants considered (P5; P12; P16) that the public sector has been increasingly shifting from being 'service deliverers' to 'service procurers'. This somewhat pessimistic assessment suggested that this evolution will increasingly render public agencies and actors inappropriate deliverers of an ecosystem approach at the street level at all anyway; P5 was particularly upset and melancholic about this admission. P5 suggested that as the public sector continues to decline (in the face of ideology and *austerity*), then other 'public-funded deliverers' will 'rise' (e.g. private sector companies or publicly-aligned VSOs) a distinctly eco-modernist narrative. If these new deliverers have the competence and interest in integrated natural resource management then they may become the best venue for taking forwards an ecosystem approach at the street level though if not, then it might be from another source. This point about who will take forwards the idea of an ecosystem approach (if not the public sector) is addressed next, in Sections 8.3 and 8.4.

8.3 Environmental voluntary sector organisations: ‘playing the contracting game’

8.3.1 Micro to medium scale environmental voluntary sector organisations

As already noted, this research found significant differences in the narratives around the consideration of an ecosystem approach at street level based upon the sector and size of different respondent organisations within the BR. Section 8.2 highlighted how the public sector was increasingly unlikely to be the venue for these kinds of street level behaviours, because *austerity* impaired their autonomy. With this in mind, this research also noted how voluntary sector participants talked about a different set of dynamics (to public sector participants) that were affecting their abilities to deliver an ecosystem approach, or aspects of it, at the street level. The significance of these difference narratives was so pronounced that organisational sector was deemed the significant factor differentiating individuals and their organisations. This is why the public and voluntary sector implementation themes are discussed separately; they each relate to the fundamental natures or dynamics affecting organisations within their sectors. It was also found that the narratives about street level implementation with voluntary sector participants were still different and broadly coalesced around two distinct themes.

Congruent to the thesis of Milbourne (2013) (given in Section 4.5), the EVS appeared bifurcated along size-lines, with broadly ‘larger scale’ organisations facing similar implementation dynamics or themes, and the broadly ‘smaller’ also facing similar or common themes. Thus, the findings from EVS organisations are also addressed in two separate Sections (8.3 and 8.4). The key emergent cross-cutting street level theme affecting those broadly ‘smaller’ scale organisations is addressed first. This research identified a number of individuals (22 of 40) representing micro to medium scale EVS organisations who thought that they were trying to implement parts of an ecosystem approach. Though there was an expressed differential between their aspiration for implementing parts of an ecosystem approach, and their abilities to do so. These respondents all expressed how their organisations were nominally separate of government, and were not quasi-autonomous non-governmental organisations.

They also all expressed how, to varying degrees and forms, their organisations operated under financially precarious business models that relied on public funding.

Section 4.5.2 accessed what little data and analysis there was regarding the EVS (as highlighted by Clifford et al, 2013), and highlighted the work of the NCVO in building annual almanacs of UK civil society. Based upon research by the Charities Commission, the latest NCVO almanac (2017) suggested that the EVS is largely reliant on funding from 'public' (20%) and 'individual' sources (70%). However, the results of the data collected in this research ran counter to this assertion. Instead, it was found that for the EVS within the BR there has a higher reliance on public sources of funding, closer to 40% of funding instead of figure suggested by the NCVO. This is important because the lower NCVO figure suggests a lower reliance on public funding which, in turn, meant that the EVS might not be substantively affected by public *austerity*. In contrast the results of this research suggested that micro to medium scale organisations in the EVS were significantly affected by *austerity* (see Kirsop-Taylor, 2018[B]). Within the case study it was found that small-to medium scale VSO's were on average close to 40% reliant upon public funding, and relied on combinations of donations, consultancy, asset management and membership for the remainder. These findings contradict the view of the EVS presented by the NVCO (2017), and offer a challenge to how public funding of micro-small scale 'environmental' VSOs in different parts of the UK and at different scales are understood. Participants suggested that the larger and more institutional the VSO (i.e. the longer it has been in existence) correlated with the diversity and stability of its funding model in the face of *austerity*; which meant that the smaller scale VSOs were more likely to be reliant on public funding. This finding chimed with the NCVO almanac (2017), and is confirmatory of their conclusions about the relationship between organisational size and reliance on public funding (discussed Section 4.5.2). Interestingly, the nature and form of the public funding that these VSO's enjoyed was of a particular variety, that was best described by P3 as 'project funding'. This conception of 'project funding' is opposed to the 'public service provision' type funding outlined in Sevä (2014), and is seen to predominate in other voluntary sub-sectors (Kim, 2013; Alden, 2015). In practice, participants described this 'project funding' as funding for a short and set periods to deliver fixed sets of activities for set cost, and a set time (as opposed to long-term,

fixed, statutory public funds). A correlation was also found between the size (and institutionalism) of the VSO, and the degree to which they were able to proactively leverage more favourable forms of public 'project funding' (Kirsop-Taylor, 2018[B]). For example, P32 representing DWT (a medium scale and broadly institutionalised organisation – part of the 'wildlife trusts'), talked less about 'scrambling around for whatever public funds they could secure' (as per P35), and instead about 'shaping the thinking inside Devon County Council towards longer term, higher value, environmental service delivery models'. Indeed, P32 felt that DWT had the 'brand, vision, and persuading power' to enable this kind of proactive response to the *austerity* period and perhaps beyond as part of wider public/voluntary service provision discourse.

Milbourne (2013) has highlighted how the way that the UK government (and its funding agencies) fund the UK EVS has been changing over the last ten years, to a more contracting based system with greater emphasis upon competition, partnering, and transactional relationships. The results of this research broadly confirm the Milbourne's (2013) assertion in this regard – that public funding for the UK EVS is shifting towards a 'contracting style' system (Asenova et al, 2010). That said, the UK has always utilised a somewhat arm's length funding relationship with its environmental civil society (unlike in Germany for example, see Kendall, 2003:189-193). Although the UK EVS were encouraged to move closer to government under New Labour (Milbourne, 2013) in the interests of helping fulfil its eco-modernist agenda (Eckersley, 2004) the results of this thesis suggest that this relationship is once again diverging (also see Milbourne and Cushman 2012). That is, the relative closeness between government and the EVS established under New Labour (Alcock, 2010) is reversing as many VSOs are again moving away from governmental homophily. In terms of relevance to this research, participants and micro to medium scale VSOs in this sample all commented on how this change to the funding landscape, coupled to their reliance on public funding was the key driver of their behaviour in response to policy-notions such as the ecosystem approach at the street level. Moreover, it needs to be noted how the phenomena of 'playing the contracting game' was only found to have relevance in those publicly (and privately to a far lesser extent) elements of the VSO's revenue generation activities. Thus, this phenomena

was only found to have relevance to the 'revenue generation' aspects of their business activities (i.e. VSO's, by their nature, can conduct other activities that are not meant to be revenue generating).

8.3.2 The voluntary sector's 'street level conundrum'

Participants from micro to medium scale VSOs talked about a particular conundrum they faced in trying to implement aspects of an ecosystem approach. Participants talked about how, no matter which values they (individually), and their organisation held, that these values were to a greater or lesser extent tempered by their need to be a financially viable organisation. On the face this appears a troubling conclusion in relation to civil societies role in natural resource governance. However, these participants (13 of 40) stressed 'they' were still organisations with clear social-ecological 'missions', and were predominately comprised of well-aligned value-driven individual workers. That said, in the current period of constrained public spending (and the fast evolving funding landscape), financial viability was now more important than ever, and in many cases, financial expediency trumped values. Participants articulated how their organisation's held nominally complete discretion and autonomy to choose the management approach they felt most appropriate, after all, they are not part of 'government' or subject to statutory functions. However, because they are not core public funded and instead operate under predominately insecure project-based funding models, they have become caught up in the UK government's movement to a competitive contractual model for funding the voluntary sector (as per Morrison, 2000; Milbourne, 2013). This means these micro-medium scale VSO's increasingly have to compete competitively for project funding to stay financially viable which might be at the expense of their values. Participants highlighted how they increasingly have to write funding bids which reflect public tender documents, which may recommend or suggest practices that are counter or tangential to their 'sense of best practice' (P18) (which a majority broadly reflective of an ecosystem approach, see Section 6.3). Due to their precarious funding models, and the evolving funding landscape these VSO's have to be responsive to top-down public policy imperatives (explicitly or implicitly articulated). Therefore, their organisational autonomy is tempered by, as P8, suggested the need to 'play the contracting) game'; or as per participant 17:

‘as an organisation we have values, we are a small organisation comprised of people with values, but we’ve ‘got to keep the lights on’ and that means doing things that might not entirely meet those values’.

8.3.3 ‘Playing the contracting game’

Certainly, the nature of tendering for public contracts (e.g. UK and EU procurement policy) has always entailed balancing, trade-offs, and compromises (McCue et al, 2015). There is a well-established public administration literature exploring this phenomena (Semple, 2015), and it has noted how in the current age of *austerity* the fundamental natures of procurement and contracting might be ‘shifting’ and in flux (McKee et al, 2012). It is into this literature that the findings of this research contribute, where participants in micro to small-scale VSOs suggested that the dynamics of these contracting relationships were changing. Ten participants (P3; P6; P8; P13) considered this ‘game’ to be about striking balances and identifying trade-offs between what funding agencies are tendering for; versus their organisational interests for running long-term programmes based upon evidence and best-practice. Much like classical street level bureaucracy, organisationally they have the discretion and autonomy (complete autonomy in theory) to interpret these policy imperatives how they will through their funding bids, and through delivery of the project. Every funding application offers the challenge to balance the organisation’s interests and ‘sense of best practice’ against the clearly stated details of the tender (which may or may not align with an ecosystem approach); and the organisations perception of what the funder is indirectly asking for. The alignment between the specifics of each funding bid and what the VSO wanted to, and could, deliver at a competitive price was a ‘space’ for street level dynamics to manifest. That said, finding alignment between what the funder tendered for, and what the VSO could deliver, was as P18 described it: ‘often more like voodoo or serendipity’. Going further, P4 suggested that once there had been scope to influence ‘the game’ by suggesting ideas for projects to funding agencies, and aligned policy entrepreneurs, though critically this dynamic had now largely been eroded. Participants suggested this dynamic had eroded due to Defra becoming an increasingly a ‘hollowed-out’ Ministry (Thaler and Priest, 2014) populated by civil servants under increasing levels of pressure towards accountability and driving cost reduction agenda. Moreover, other participants suggested that this also not

extended to their relationships with Natural England and the Environment Agency who they suggested were currently less receptive to hearing feedback and debate from the street level than had previously been the case. P4 suggested that this dynamic had been eroded to the point where all the power in shaping funding bids lay with the funding agency, with (what appeared to be) limited vertical engagement and interest in what VSOs at the street level wanted or thought. This finding is counterfactual to conceptualisations of contemporary collegiate governance in which policy-making (and implementation) is a 'negotiated' settlement between stakeholders and policy-elites (Bingham et al, 2005) and challenges notions of evidence-based policy-making. These findings suggest that the contemporary 'squeeze' on public funding has shifted the power in this dynamic back to policy elites who are tightly controlling the supply of funding. The national-scale participants to this research did not uniformly agree with this conclusion however. P31 suggested that from the perspective of a government funded arms-length agency, they continue to try to engage VSOs at the street level to drive best-practice notions of integrated natural resource management. However, this effort is conflicted and stymied by other particular challenges they faced, such as department spending reductions and the concern over a lack of 'public bandwidth' for anything other than Brexit. This finding reinforces the multi-level, multi-scale nature of some contemporary street level thinking (Hupe and Van Kooten, 2015) by suggesting that each scale of environmental governance (national, regional, local) faces its own unique challenges of interpreting policy-notions for implementation.

In this case it was found that the national-scale participants also faced interpretation, capacity, and funding barriers at the street level. This finding reinforces the findings of Hupe and Van Kooten (2015) in suggesting that street level studies cannot just examine the final implementers in isolation, and wider, broader conceptualisations of street level settings need to be considered. It also suggests that each scale of publicly funded governance holds the potential for some form of discretionary and autonomy driven 'street level' dynamics to play roles in influencing implementation of policy. This logic suggests that, considering that the policy transposers have a degree of autonomy and discretion, that every scale of multi-level governance that the ecosystem approach has percolated through (see Figure 2.1) has been a potential setting for street level dynamics of policy re-interpretation. Thus, for weak policy-notions with little top-down

elite enforcement there are multiple settings (in the 'implementation chain' – Figure 2.1) in which discretionary changes can be affected.

As an example of 'playing the game' within the BR both P3 and P9 commented on how the Malawi principles were an artefact that they tried to include as both a conceptual structure 'who they are' as well as 'what they do'. It was suggested (by P3 and P9) that their organisation is consciously seeking opportunities to weave the ecosystem approach into their funded projects. However, they also talked about the challenges with trying to reconcile the many (perceived) misalignments between an ecosystem approach and public funding opportunities; and perhaps the most pressing challenge lay in mismatched temporal scales. Whilst the ecosystem approach suggested consideration of consistent long-term approaches to management, public funded projects tended to be inherently short-term. P3 and P9 suggested that these publicly funded projects tended to be orientated towards delivering tangible, policy-relevant 'results' over short time-scales. Or worse, these tenders were fetishizing fashionable or pet-interests of ministers and senior civil servants in Defra (or other government elites). As P3 emphatically suggested, the real challenge was finding ways to weave the consideration for a consistent, long-term, ecosystem approach into short-term, results-orientated funding applications that reflected the latest government buzz words or fetishes. P9 articulated this succinctly where they suggested that 'it's not rocket science, we know how to go about this, it's just that politics distorts ecological best practice on the ground'.

8.3.4 Situating findings within the 'voluntary sector', 'public administration', and 'street level' research literatures

These results confirmed aspects of the limited literature on the contemporary UK EVS (Clifford et al, 2013) where, in nearly all cases, micro to medium scale VSO's were found to be substantively reliant on public funding. Whilst this finding was broadly counter to the assertions of the latest NCVO almanac (2017); other findings supported the assertion by the NCVO that the EVS sub-sector largely considers themselves values or mission driven organisations populated by values-orientated individuals (congruent with Clifford et al, 2013).

Certainly, aspects of 'playing the contracting game' have been well-understood by public administration scholars for decades. There is a substantial literature highlighting how contracting (procurement) is an essential aspect of the contemporary public-voluntary sector system (Nowland-Foreman, 1998). Elkenberry and Kluver (2004) argue that the contemporary 'contracting game' is, in fact, an important element in balancing the funding needs of many laudable and worthy projects against limited public monies in contemporary voluntary sector governance. That said, the results of this research found that in the contemporary age of *austerity* where public budgets are constrained, the power relationship between funders and contractors may have shifted, with power moving towards the funders. It was also found that within this dynamic between funders and VSOs, there exists 'space' for street level discretionary behaviours to manifest. Moreover, these findings could also be said to be typical of the kinds of internal conflicts that VSOs grappling with the challenges of balancing 'mission with money' should face in the contemporary contracting environment (Nowland-Foreman, 1997; Dolnicar et al, 2008). However, it was in the 'space' between funder and deliverer that this research found small to medium scale VSO's taking consideration of an ecosystem approach as a weak policy-notion. Other literature has shown how through *austerity* the relationship between funders and VSO's is changing (UK Public administration committee, 2011); and Buckingham (2009) has already identified three of these contemporary conflicts - changing demands for expertise, increasing job insecurity, and tensions between competition and cooperation. That said, the findings of this research suggest that at the street level there is a tension between what the VSO wants to deliver, and what the public funder wants to have delivered, and in this interaction there is 'space' for the VSO to inject a degree of their interests towards particular weak policy-notions. This included consideration for aspects of an ecosystem approach (but others were also found – e.g. *rewilding*, the *big society* etc).

What little literature that exists on the roles that VSO's play at the street level is principally focused around organisations acting as the directly contracted providers of services (Smith and Lipsky, 1996; Deakin and Walsh, 1996; Kim, 2013). Little of this literature approaches the subject of how the voluntary sector responds to weak policy-notions through contracting, which speaks to the originality of the results shown in

Section 8.3. Whilst there have been calls from other scholars to 'open up' street level bureaucracy to scholarship exploring the contemporary contracting modes of public administration (Ellis, 2011); there appeared little in this literature addressed addressing weak policy implementation in particular. The literature does suggest that the voluntary sector is an increasingly utilised venue for contracted public services (Smith and Lipsky, 1996; Kim, 2013). However, there was significantly less literature detailing this phenomena in the EVS. As this research found for micro to medium scale VSOs who are forced to 'play the contracting game' for public projects, there is a small and balanced 'space' in which they have discretion to inject a degree of their individual and organisational preferences. Much like Howe (1991 and Evans (2011) this finding refutes the notion that new public management practices had eradicated street level dynamics from public administrations. This finding highlights how even in the contracting of short term, precarious project funding there is still the 'space' for street level dynamics to affect which elements of different policy-notion are being implemented. This finding reaffirms the contention of Evans (2011) and Ellis (2011) that the pace of change in the public sector exceeds the bonds of managerial control. This means that there will, for the time, continue to be a street level 'space' in which discretionary street level responses to weak policy-notions are formed. However, if the current *austerity* period is taken as just an extension of the new public management logic (Smith and O'Leary, 2012) then these findings may instead point to an acceleration in the contraction of the street level 'space' under new public management.

8.3.5 Conclusion to 'playing the contracting game'

The role of voluntary sector actors as deliverers of public services at the street level is a well-researched dynamic (Smith and Lipsky, 1993; Kim, 2013). This discourse is increasingly starting to include environmental SLB (Sevä, 2014). However, the results of this research found that the *nature* of public funding support given to EVS organisations (as the deliverers of policy), appeared different to the kinds of direct service delivery envisaged by Smith and Lipsky (1993). This research found that many micro to medium scale VSO's within the case study are increasingly having to 'play contracting games' of balancing their values and interests against the requirements (and perceived requirements) of the public funders; and it was into this balance that

they were inserting their consideration for aspects of an ecosystem approach. Critically however, this dynamic was not found to any significant degree within the broadly 'larger' VSO's in the sample. That was not to suggest that it did not exist, only that it was not evident from the data collection. Instead, the 'larger' scale VSO's consideration for an ecosystem approach appeared driven by a very different kind of cross-cutting theme. Although this theme is claimed to have a degree of 'street level' nature, it also points towards the very different kind of relationship to 'policy' that larger VSO's enjoy.

8.4 'Re-awakening' towards an ecosystem approach

8.4.1 Introduction to Section 8.5

The final category of organisations who were found responding to an ecosystem approach at the street level were those broadly 'larger' VSO's (a classification that was confirmatory of Milbourne, 2013). Eight participants (of 40) representing three medium to large scale VSO's active within the BR articulated how they were considering an ecosystem approach in their practice. Although these are discussed in Chapter Eight as being street level, the claim to their 'street level nature' is perhaps the most tenuous of all.

The eight participants broadly talked about how their organisations were both large enough, and/or diversified enough, so as to not have to 'play the contracting game' in any significant fashion that affected their organisational strategic direction. Moreover, due to their limited exposure to, or reliance on public funding, they did not feel a noticeable or overly detrimental effect from the *austerity* period either. These three organisations, the National Trust, DWT, and the NFU, were all the local-regional representatives of larger national VSO's (namely the National Trust, The Wildlife Trusts, and the NFU). Much like the rest of the sample these participants (P13; P20; P25; P29; P32; P35) all agreed that conceptually the ecosystem approach was a laudable and aspirational framework for integrated management practice. That said, a majority of these participants (5 of 8) talked about the ecosystem approach as being a policy-notion that, although they had once been aware of it, had lapsed in their thought and consideration. However, these participants considered that their

organisations were now giving landscape-scale integrated approaches significantly more effort and application. With this in mind, these five participants considered that their organisations should now be keen to look again, and discuss the ecosystem approach policy-notion as a framework for structuring their integrated management programmes. These participants went so far (in places) to suggest that they may, with help, be ready to think about wider inter-organisational adaptation towards an ecosystem approach. Thus, Section 9.3.4 both poses, and then speculates an answer to the question of: 'are large voluntary organisations the new inheritors to the ecosystem approach?'

8.4.2 Medium to Large VSO's and integrated natural resource management

These three medium to large scale VSO's were all voluntary in nature, and had utilised diversified (but subtly different) business models. They suggested that these diversified funding models had insulated them from the reduction in public monies seen though *austerity*, as well as the need to 'play the contracting game' in any substantial way. Commenting participants suggested that this meant their *organisations* had been largely independent to pursue their own interests, subject to other unique internal and external drivers and pressures. For example, the National Trust is based upon a membership, land/property ownership, and projects basis, and has been undergoing in recent years a shift from a 'preservationist' to a more 'conservation-focused' orientation (as per D17). In a different manner, the NFU's business model is predominately membership based, as they seek to represent and advocate for the interests of English (and Welsh) farmers in policy and practice (P35). Finally, DWT employs a mixed membership and projects business model with a small amount of landholding activity. Although DWT do 'play the contracting game' to a point, participants (P13; P32) articulated the far more strategic approach they took towards public funding. Indeed, for DWT *austerity* appeared an opportunity to realign the organisation towards the new opportunities as 'environmental service deliverers' that the public sector were vacating (Pickernell et al, 2011).

Each of these eight respondents articulated how the ecosystem approach was something they 'vaguely remembered' (P29) or 'remembered hearing that from

somewhere' (P35) (excluding P3 and P9, who are officially part of DWT in working for the NIA). All of these participants (4 of 40) expressed an interest in landscape-scale integrated natural resource management projects. In the case of DWT, they highlighted how they had already run landscape-scale integrated projects; and in the case of the National Trust participants highlighted how they had one such project in creation (the South West Coastal Corridor). Furthermore, upon learning about the CBD version of the ecosystem approach, three participants (re)considered it a potential framework for structuring their landscape scale integrated projects (P29; P32).

The findings presented for this group so far are not to suggest that the organisations exist in a vacuum with no original policy-ideas of their own. Participant comments suggested that in many cases they have their own dedicated national policy teams, and moreover, often saw themselves as at the 'cutting edge of best practice' anyway (P32). The participant narratives suggested how these organisations were both reactive to policy (both statutory and non-statutory), as well as being important influencers on national policy (Egdell and Thompson, 1999; Thirdsector.co.uk, 2002). It was speculated that they may even be sometime members of the UK agri-environment *iron triangle* (as per footnote 33) (NFU, online) at the apex of this policy community (Jordan et al, 1994). That said, the results of this research found no overt policy pressure being applied by these *organisations* with regards to the ecosystem approach, but four of participants did express feeling a sense of 'pressure' towards ecosystem approach. Interestingly, this research did however find a significant amount of interest from the six participants about the ecosystem approach as a framework to structure their integrated landscape scale projects. The conclusion drawn from this is that (apart from the NIA participants) this group had little existing interest in championing or promoting the ecosystem approach as a policy-notion; but they may have an interest in doing so if it could be shown to offer value for structuring and framing their integrated landscape scale management interests.

8.4.3 Medium to Large voluntary sector organisations: inheritors of the ecosystem approach?

The results of 8.4 found that the greatest potential implementers of an ecosystem approach at the street level are those large VSO's which are suitably insulated from the public *austerity* agenda and have a mature diversified business model. They do of course, to a limited degree, 'play the contracting game', and have been largely immune to *austerity*. However, this research found that based upon a number of key dynamics, these organisations still offer the best long term 'fit' for leading implementation of the ecosystem approach. This is due to:

- Their relatively stable financial positions mean they can afford to plan strategically for long-term management horizons that are less susceptible to the vagaries and fetishes of politically motivated funding cycles.

- They have all started upon or shown significant interest in long term, landscape-scale, integrated management plans. This research confirmed that these projects require conceptual frameworks to direct and structure their integrated management activities.

There is, of course, a literature exploring the different forms and varieties of landscape scale integrated management practice (for example in Hunt and Howard, 2015). However, these participants all agreed, to different degrees, that the ecosystem approach could fit this requirement if properly 'sold' to internal audiences[45]. That said, these are large organisations with many legacy interests, structures, and modes of working (as alluded to in Scott et al, 2014 and Waylen et al, 2015). Therefore, assuming that an ecosystem approach could be grafted onto their new and emergent landscape scale projects would be naïve (as per 'models for mainstreaming an ecosystem approach', in Scott et al, 2014). Instead, based upon the experience of the implementation of the ecosystem approach within the BR, the results of this research suggested that the optimal mode for promoting an ecosystem approach within these large VSO's would be for individuals to internally champion and promote the idea of an ecosystem approach. In the age of *austerity* there exists a real threat that the

[45] 'Selling' an ecosystem approach to internal audiences, as well as realigning large organisations towards fundamentally new modalities of operation, are both challenges that Natural Resources Wales is currently facing as it institutes an organisation wide alignment towards an ecosystem approach (P37; P40). See Kirsop-Taylor (2018) for more information about this phenomena.

ecosystem approach will be forgotten in institutional memories (as per 8.3), and so enabling champions to act as bulwarks against this may be key to the long term survival of this policy-notion in England. The perfect test of this exists already in DWT, where the NIA staff members have the potential to be promote the idea of an ecosystem approach as a policy-notion intra-organisationally. Narrative discourse with P3 and P9 suggested that this effort would need to be based upon the experience of an ecosystem approach being successful in practice within the NIA. Considering the alacrity with which the two NIA participants discussed their interest in advocating an ecosystem approach, this might be a realistic prospect; and this point is returned to in Chapter 9 (Section 9.7).

8.4.4 Medium to Large voluntary sector organisations operating at the street level

From a street level perspective, these medium to large scale VSO's were found to be largely autonomous to set their own internal alignment and responses to policy. Through the 'project' aspects of their diversified funding models they did deliver publicly funded contracts, though the respondents suggested that they still exerted enough power to decisively shape these to suit their strategic interests. Therefore, as deliverers and interpreters of integrated natural resource policy-notions, these organisations have significant power to act autonomously and in a discretionary manner in deciding which aspects of weak policy they are going to respond to. However, the street level literature and theory has little to say about medium to large scale VSO's who are not acting as direct contractors of large public services. Certainly, there is a limited literature discussing such VSO's in regards healthcare provision (Bergen and While, 2005), social services provision, and others (Ellis, 2011; Kim, 2013); but little in natural resource management settings (as per the contention of Sevä, 2014). These findings distil one of the key challenges that this study revealed in its use of street level bureaucracy. Classical, and even the expanded field of street level studies, tend to be concerned with partial policy implementation in hierarchical public policy subsystems, and does not deal with loser policy subsystems where the lines of authority between government and bureaucrat and less well defined. Thus, the choice of this theory to explain the partial implementation of a weak policy-notion always ran the risk that the 'policy chain' (as Pressman and Wildavsy, 1973 would

have it) was so loose that it was impossible to draw lines of connectivity and influence. Although this critique was somewhat addressed in Section 4.4.3 it surfaces again in this finding where the hierarchical connection between government and medium/large VSO's through weak policy is difficult to establish. Although these VSOs run publicly funded projects, they are not policy agnostic, and often have significant influence over policy agenda setting. This means that there is little likelihood of them feeling the need to discretionarily amend, respond to, or translate weak policy in response to pressure they feel from government or from funders.

8.4.5 Conclusion to 'inheritors to the ecosystem approach'

The third cross-cutting, emergent theme found to be broadly influencing implementation of an ecosystem approach was found in medium to large scale VSO's. The responding participants suggested that these three organisations might be receptive to a framework for integrated management that could support their new (and developing) interests in landscape-scale integrated natural resource management projects. The ecosystem approach might offer a good fit for this requirement. As large (and powerful) national-scale VSOs, these organisations are subject to a multitude of pressures and pulls towards different policy-notions and ideas of best practice to Introducing and propagating the ecosystem approach policy-notion within these organisations would require individuals and leaders to champion and promote it. Even then, participants suggested that it was more likely to be a realistic opportunity in in DWT and the National Trust, and substantively less so in the NFU (based upon its business model, and interests (P38). Instead, a good test case for this approach might be seen in the two participants from the NIA who could act as champions of the ecosystem approach within DWT. Though again, attempting to promote an ecosystem approach more widely within DWT would be a complex and fraught task that would require time, patience, consistency and most importantly, evidence of success and value. That said, such a mission as this appears to fit within the remit of the NIA, and the interest of the two participants from it. What came from P32 and P13, both senior managers within DWT, was a willingness to listen to messages about the ecosystem approach, which should be seen as positive and an opportunity to be taken forwards. However, there are serious questions that remain unanswered by this study – could such an approach be used to propagate an ecosystem approach within larger

organisations like the National Trust? Would it be possible to identify and enthuse a new generation of champions within this and other organisations? How do they continue to evidence the value of this approach? These are all questions not answered here, but are for another study and so are addressed in the conclusion at Chapter Nine.

8.5 Evaluating the utility of SLB theory for exploring the implementation of weak policy

As with the justification given in Section 4.5, this research adopted a street level approach to exploring the *implementation deficit* of the ecosystem approach. The literature in this field (as per Annex C) suggested that individuals and organisations held an important and, relatively under-researched dimension to the *implementation deficit*. It was argued in Section 4.5 that street level bureaucracy represented a political science framing that could potentially offer new explanations into the *implementation deficit*. The findings analysed and interpreted in this Chapter show how SLT has, in fact, offered original insights into this phenomena. These new understandings have offered value in terms of originality to the wider and evolving street level literature (as in Hupe et al, 2015).

This research also identified a number of limitations to the use of SLT for explaining the *implementation deficit* of weak policy-notions. It was found that the larger and more professionalised the VS organisation, the less likely street level influences were affecting the discretionary behaviours of its individual workers. Speculatively, this finding may have been the result of the nature of this inquiry, and that a deeper ethnographic approach within single organisation might have yielded more granular detail; and this should be seen as an opportunity for further enquiry by another study. This research also reaffirmed the notion that ecosystem approaches are complex, multi-disciplinary, multi-scalar (Waylen et al, 2014[B]), and that in many circumstances participants related more to individual Malawi principles rather than 'the ecosystem approach' as a unified concept. This means that, although a number of dynamics affecting implementation were found, that these dynamics might have been more powerful and significant if a simpler and less-complex weak policy-notion was the

subject of investigation. It was concluded that a simpler weak policy-notion might have been easier to 'reveal' at the policy-practice interface, and then confidently assign street level characteristics to its implementation. This was because the line of connection down the 'implementation chain' (as per Figure 2.2) might have been easier to establish, as opposed to the ecosystem approach which has been reinterpreted at every scale of governance it has percolated down through (as argued in Kirsop-Taylor, 2018[A]). As Chapter Seven found, aspects of an ecosystem approach were being implemented and used within the BR; and as Section 8.1 highlighted, this was based upon a degree of pressure from 'the ecosystem approach' as national policy. That said, the degree to which 'the ecosystem approach' as a unified policy-notion was being implemented in a street level fashion was harder to claim.

This research also found that there is a difference between publicly funded 'projects' and 'services'. 'Services' are the usual preserve of street level studies due to their more pronounced public engagement, and well defined lines of causation and control (Kim, 2013). That said, the findings of this thesis suggest that at the 'coalface' of delivering the ecosystem approach policy-notion into practice there were a number of phenomena that should be considered 'street level'. These street level phenomena fit with the broadened conception articulated for 'street level studies' articulated by Ellis (2011) and Hupe et al (2015).

8.6 Conclusion to Chapter Eight

In conclusion, Chapter Eight has examined the degree to which SLT may have offered new insights into the *implementation deficit* of the ecosystem approach. Three principal findings were articulated. Although public sector actors were considerate and well disposed towards the notion of an ecosystem approach they (broadly) considered that in the age of *austerity* their abilities to act discretionarily towards aspects of an ecosystem approach had been curtailed. Participants suggested that *austerity* had reduced their abilities for discretionary spending and was forcing their retrenchment towards statutory functions; it was pushing them away from service delivery activities and towards service provision activities; and it was pushing them towards greater marketisation of public services. These dynamics were all contributing towards their

reduced capacity for considering an ecosystem approach at the street level. It was concluded that the real inheritors of the notion of an ecosystem approach might instead be larger-scale VSO's. Although their implementation dynamics were less 'street level' in nature, the results suggested that the confluence of their more institutionalised natures and an emerging interest in landscape scale integrated management frameworks might make them the most appropriate champions of an ecosystem approach in the near future. That said, of the three street level dynamics that were identified, it was discerned that the most important, as verified by the data, was related to small to medium scale VSO's utilising the 'contracting game' as a mechanism for promoting their partial personal and organisational values and preferences towards policy notions. Although there is a small literature exploring the impact of public contracting upon voluntary sector organisations (Eikenberry and Kluver, 2004; Entwistle and Martin, 2005; Lewis, 2005), there is a gap in the literature regards how these organisations engineer public contracting as a means of delivering their own interests and policy agenda. This finding offers a degree of originality where it highlights one of the new 'administrative settings' in which street level relationships are played out. This finding supports contemporary understandings and critical debates about the boundaries of SLT (Ellis, 2011); and offers new insights into how the voluntary and public sectors continue to adapt to the pressures of *austere* times (as per Milbourne and Cushman, 2012; Kirsop-Taylor, 2018). They potentially also suggest new directions for SLT in exploring and understanding the fast evolving world of public service contracting under *austerity*. These issues, and the policy suggestions that flow from these findings, are explored further in the conclusion to this thesis, Chapter Nine, which follows next.

Chapter Nine: Conclusions and recommendations

Research respondent 12: ‘Notions of the ecosystem approach are embedded in the heart of the new MAB strategy. We’ve always thought that the MAB programme was, in a roundabout way, one of the creators of the ecosystem approach. So it is has been a theme that has run throughout MAB from inception up to this day’.

9.1 Introduction to Chapter Nine

Chapter Nine offers the conclusion to this thesis. Section 9.2 sets out how this research has met the aims and objectives established for this research, and Section 9.3 discusses the key findings that emerged from the research. Section 9.4 then articulates how this thesis has partially met a number of previously identified ‘gaps’ in the ‘ecosystem approach implementation’ and ‘street level’ research literatures. Section 9.5 shows how by meeting the ‘gaps’ in the literature this thesis has made original and impactful contributions to a number of research literatures. Upon the completion of this thesis six important methodological reflections became apparent, and these are addresses in Section 9.6. This is followed in Section 9.7 by a wider reflective addressing a number of limitations to this thesis, and then by Section 9.8 which presents a number of research-informed recommendations for the BR and national policy makers. Section 9.9 synthesis the original findings and research conclusions towards a future research agenda and Section 9.10 offers a number of key concluding remarks.

9.2 Meeting the research aims and objectives

This research was set within the broad overarching context of the sixth global extinction event and presented integrated management approaches (and particularly the ecosystem approach) as part of a potential solution to the challenges posed by it. In this context this research broadly sought to understand how individuals and organisations within the North Devon UNESCO biosphere reserve were implementing an ecosystem approach. This thesis had three broad research aims which were:

1. To discover what members of the North Devon UNESCO biosphere reserve partnership thought about the use of an ecosystem approach
2. To assess whether this approach to management is being implemented within this case study area
3. To assess whether street level bureaucracy theory could offer explanations about its partial implementation.

From this understanding, three distinct ancillary research objectives (in the form of questions) emerged which drove and structured the thesis. These questions were as follows:

1. How is an ecosystem approach understood?
2. How is the ecosystem approach being implemented in this area?
3. Do street level dynamics play a role in this implementation dynamic?

These research aims and objectives were met by this study through its key results which were discussed in empirical Chapters Six, Seven and Eight. A concluding summary of these results and how they met the research aims are discussed next in Section 9.3.

9.3 Discussion of key findings

Although this research broadly explored and analysed implementation of the ecosystem approach, no one overarching narrative theme was found that can explain the breadth of findings. Instead, three categories of key findings (that broadly correlate to the ancillary research objectives) are presented and discussed in terms of their implications on theory, policy and practice. That is, the research findings can be seen in terms of ancillary question one to three: interpretation of an ecosystem approach (i.e. *ecosystem science*); how an ecosystem approach is being utilised within the BR; and the degree to which SLT offers explanations about the implementation of an ecosystem approach policy-notion.

9.3.1 Ancillary question one: Interpretation of what the ecosystem approach was

This research found that members of the BR partnership had variable and inconsistent opinions on what an ecosystem approach is. Participant's levels of comprehension about the ecosystem approach confirms the findings and conclusions of other recent studies (Scott et al, 2014; Waylen et al, 2014[A]; Fish and Saritisi, 2015). Considering that none of the other studies in this field explored understandings of the ecosystem approach in depth within a single designated area, this first key finding adds an original contribution to knowledge about how the ecosystem approach is understood. This finding suggests that different perceptions and conceptualisations of an ecosystem approach is not just a phenomena that occurs between different projects and designations, but also between the stakeholders within individual projects and designations.

Participating stakeholders from within the BR partnership did not offer consistent opinions on what the approach was and used uncritical and inconsistent language to describe their understandings of it. This phenomena has been found in previous studies, and labelled by Scott et al (2014) as *ecosystem science*. The first key finding of this thesis confirmed the existence of a state of *ecosystem science* in understandings within the BR partnership. The main thrust of *ecosystem science* outlined in Scott et al (2014), is that between individuals within a sample there would be a significant divergence of opinion on what the ecosystem approach is. Critically, this research then explored the *ecosystem science* notion in terms of the nature of the relationships between the different ideas/policy-notions that comprise it (e.g. ecosystem services, the ecosystem approach, natural capital, ecosystem based management, ecosystem services approach etc). It was found that these different policy-notions were bound together by the perception of similarity in their names, key themes and ideas. Thus, they existed in a connected but not exclusive state. The nature of the relationships within *ecosystem science* is a contested, if as yet unstructured debate. Some scholars envisage the relationships between the different *ecosystem science* policy-notions as collaborative and reinforcing (Fish et al, 2011; Scott et al, 2014) and others see it as competitive and zero-sum in nature (Lawton and Rudd, 204; DeLucia, 2015). This research found evidence for the later of these

arguments. This finding therefore supports the idea that the relationships within *ecosystem science* as competitive, with each appearing to compete for the attention of policy-makers and policy consumers. Whereas Lawton and Rudd (2014) highlighted the competitive nature of these different ecosystem ideas (as per Section 2.1), *ecosystem science* as articulated in this study developed the concept, by showing the policy-notions to be a more complex and rich narratives comprised of policies, ideas, research, champions and language. This complexity of narrative chimes with DeLucia (2015) who conceptualised ecosystem services through the thick method of a Foucauldian genealogy[46]. Whilst DeLucia's (2015) research (and to a lesser extent Dunlop, 2014) spoke to the 'nature of kinds of information' that comprised ecosystem services; the findings of this study suggested that the field of *ecosystem science* needs far more empirically grounded research before the 'nature of *ecosystem science*' can be said to be 'understood'. Indeed, whilst the results of this research agree with DeLucia's origin of the competition within *ecosystem science* as 'result of competing forces each trying to assert hegemony*'*, it considered greater empirical research was needed to explain the nature of the competition. Whilst the findings of this study add to this discourse (e.g. zero sum, competitive nature), there is clearly still space for further research within this discourse such as how are the competitive packets of knowledge within *ecosystem science* organised, conceptualised, articulated by its champions and weaponised?.

Assuming that these findings about the nature of *ecosystem science* are valid, then the main conclusion that was drawn was that, currently, in the consideration of England-orientated policy-makers, the ecosystem approach is a policy-notion that is in decline. That is, the findings suggested that in the 'minds and opinions' of English 'political elites' and policy-makers, that the ecosystem approach is policy-notion currently in decline, compared to natural capital approaches, with whom it is competitive. The findings of this research suggested that the decline in consideration

[46] As noted in Gutting (1990) the philosopher Foucault developed two particular forms of historical analysis (archaeological and genealogical). Genealogies are historical analysis techniques which attempt to take account of a social or philosophical belief by accounting for the totality and breadth of its discourse. As noted, DeLucia (2015) attempted to frame the complex array of information, philosophy, ideas and policy inherent in *ecosystem science* in historical terms, in terms of a genealogy. Whilst this is no doubt an interesting frame for trying to capture the breadth of complexity inherent in *ecosystem science*, this thesis considered that this did not lead to greater understandings about the current and contemporary nature of *ecosystem science* as a dynamic policy setting.

of the ecosystem approach as a policy-notion may be inversely-proportional to the rise of natural capital approaches.

9.3.2 Ancillary question two: An ecosystem approach within the North Devon UNECO biosphere reserve ecosystem approach

Based upon the weak and interpretative nature of the ecosystem approach, each project or designated area which seeks to align towards and implement it does so in a fashion which suits their particular interests, skills, assets and legacies. This logic was found to be true for the BR which is consciously and unconsciously implementing its own unique iteration of an ecosystem approach. A thematic analysis of the interview and documentary data was analysed through Korn et al's (2002) four thematic clusters of the Malawi principles. This found that the BR is largely attempting to implement many of the social principles of an ecosystem approach. Although it is doing very well at implementing consideration of ecosystem services, its consideration of the other two ecological principles were less evident. Similarly, the BR was having both successes and challenges in implementing the principles relating to scale and dynamics. Lastly, it was found that, despite many recent projects and initiatives, that the BR is still facing significant challenges in the consideration of the economic principles. That said, this difficulty was largely based upon macro-forces outside of the control of the BR, who are actually attempting to positively engage with new market-based tools for conservation and management.

9.3.3 Ancillary Question three: Street level dynamics driving implementation

Three distinct street level emergent themes were found to be affecting implementation of an ecosystem approach within organisations in the BR. These were found to be correlated to organisational size and constitution. These findings confirmed and supported the use of an iterative logic (as per Section 5.1) in framing the *implementation deficit* within an existing political science, street level theoretical frame.

It was found that for the public sector organisations the hegemonic pressures of *austerity* were driving out their overt discretionary consideration of an ecosystem approach. The pressure to commercialise activities, to reconfigure internally, and to

retrench towards statutory functions, were all driving public participants away from street level consideration of an ecosystem approach. Certainly, in some cases there were opportunities for trying to promote integrated thinking into their public organisations. That said, the ecosystem approach itself was found not to be a conscious street level consideration. Public participants suggested that *austerity* might be contributing towards a fundamental re-configuration of the public sector away from being 'service deliverers' to being 'service procurers'. Such a transition could critically impact upon the discretionary power of public bureaucrats, and although a relatively under-researched field, is certainly worthy of further research. Although the effects of new public management upon discretionary public decision-making at the street level may be overblown (Evans, 2011), *austerity* may yet act to reduce the discretionary 'space' of public bureaucrats and the longer that *austerity* continues the less likely they were discretionarily to consider weak policy-notions in their practice. This could result in a critical loss of institutional memory for weak policy notions of best practice (such as the ecosystem approach); a finding which has important ramifications for globally-situated designers of environmental *regime*. As outlined in Section 4.3.2 discretionary powers were viewed in this context as being positive (in terms of promoting street level implementation of non-statutory policy-notions), though it should also be accepted that discretionary power may also bring negative consequences (e.g. inconsistent policy outcomes, implementation failure, democratic deficit). That said, public bureaucrats losing discretionary powers towards notions such as an ecosystem approach might signal a need for a wider re-appraisal of how weak regime seeking to stimulate behavioural change (based upon notions of best practice) are fundamentally designed and delivered.

This thesis found that within this case study contemporary understandings about the UK EVS is funded and supports itself (NCVO, 2017) might not represent an entirely accurate picture. This research found that these organisations reliance on public sources of funding was closer to 40% of the revenue as opposed to the 20% quoted in the NCVO almanac (2017). It was also found that micro to medium scale VSO's, based upon their business model, were having to 'play the contracting game'. In this 'game' environmental VSO's are injecting a degree of personal and organisational preference behaviour that was reflective of an ecosystem approach. Although these

competitive tenders are finely balanced and considered, it was discovered that the combination of being small, value driven, and relatively under-professionalised organisations facilitates for a 'space' in the contracting process in which discretionary preferences towards different policy-notions can be promoted. The public administration literature is replete with research on public contracting, though critically the findings of this research also suggested that the locus of power in these relationships was (due to *austerity*) shifting towards the funders of public contracts. The difference in street level themes found acting between the broadly 'smaller' and broadly 'larger' confirms the thesis of Milbourne (2013) (a 'bifurcated sector'), as well as her contention that organisations within the wider sector were being pushed towards a greater 'contracting style' approach to public procurement.

The final emergent street level theme found that perhaps the real inheritors to the ecosystem approach were the medium to large scale VSO's. Based upon their critical engagement with the notion of integrated management, their diversified business models, and their only peripheral interest in 'playing the contracting game', these VSOs were in the optimal position to drive forwards an ecosystem approach into the future. That said, the degree to which this theme was truly a street level dynamic was questioned in the analysis.

9.4 Meeting the research gaps

The key findings presented in Section 9.3 supported this thesis in meeting the 'gaps in the research' identified in Section 2.8 and Section 4.5. Chapter Two presented a review of the ecosystem approach implementation literature, and synthesised two specific 'ecosystem approach research gaps' that this thesis wanted to speak to:

9.4.1 *Ecosystem science*

The ecosystem approach literature discussed how one of the major impediments to implementation at all scales of governance, and in all countries, was the problem of misconception (IEMT, 1995; Shepard, 2004; 2008; Smith and Maltby, 2003; Fish and Saritisi, 2015; DeLucia, 2015). There was an emergent discourse exploring this dynamic through UK case studies (Waylen et al, 2014[A]; Scott et al, 2014; DeLucia,

2015) which had led to Scott et al (2014) describing a cluster of commonly misrepresented 'ecosystem-sounding' terms as *ecosystem science*. It was alluded to that *ecosystem science* was meant as both a heuristic (for simplicity's sake) as well as a more profound, yet non-described, state of inter-relation. That said, there were significant gaps in understanding about whether *ecosystem science* was a phenomena that existed within natural resource management partnerships as well as between them. Additionally, little was known about the fundamental nature of the different policy-notions and relationships that comprise *ecosystem science*, and why this state was driving poor implementation. This research gap was substantively met in the findings of Chapter Six.

9.4.2 UK MAB and the ecosystem approach

The literature explored in Section 2.8 and Chapter Three suggested there should (in theory) be a strong relationship between the idea of ecosystem approaches and the UNESCO MAB programme. Both the CBD and UNESCO considered the two concepts as intrinsically related and highly synergistic. That said, there remained remarkably little contemporary literature exploring how ecosystem approaches were being implemented within biosphere reserves. This thesis found that there are fewer than five such studies in European contexts, and none for UK contexts which, considering the unique perspective the UK had adopted in regards the MAB programme, was surprising. This research aimed to meet this research gap. Through the empirical results and discussion undertaken in Chapter Seven, this thesis confirmed that the MAB and ecosystem approach concepts are, in this English context, well aligned synergistic concepts. Within the case study BR it was broadly found to have many stakeholders who both understood the key concepts of an ecosystem approach, and considered that aspects of the approach were being used in operation. The ecosystem approach appeared to play an important role in shaping the strategies and integrated practices in a number of key organisations (e.g. Devon Wildlife Trust and the biosphere reserve itself) and projects (e.g. the NIA). As noted in Section 3.3.5 regards implementation of an ecosystem approach in a UK context this BR was considered a typical case study. This means that this conclusion about the synergy between an English BR and an ecosystem approach could have a wider external validity.

Additionally, Section 4.4 in Chapter Four identified a number of 'research gaps' in the contemporary and emergent SLT literature (characterised by Sevä, 2014; Hupe et al, 2015). Through the key findings this research helped meet two particular 'gaps' in this SLT literature.

9.4.3 Paucity of political science explanations

The conclusions to Section 2.8 and Chapter Four both highlighted the significant paucity of political science explanations into the *implementation deficit* of an ecosystem approach. Both the ecosystem approach and MAB-based literature reviews highlighted the substantial paucity of studies accessing the political science literature for offering theoretical explanations of the *implementation deficit* of ecosystem approach, despite the significant body of political science implementation theory that could be drawn upon. It was considered that SLT may offer new understandings about what is contemporaneously driving individuals and organisations towards or away from implementing an ecosystem approach. This research gap was addressed by the findings of Chapter Eight which offered an original analysis of the *implementation deficit* through a street level theoretical frame. This led to a number of original conclusions about how aspects of contemporary public governance and policy implementation were driving the ecosystem approach's consideration in practice.

9.4.4 Street level theory explanations of weak policy implementation

The review of SLT literature (Sections 4.3 - 4.4) found that this SLT is considered an evolving and dynamic theoretical frame that continued to offer explanations about bottom-up implementation in the evolving world of public administration. That said, the SLT literature was found to have little to say about how weakly articulated, delivered, and enforced policy-notions are implemented. This literature is predominately focused upon the dynamics of struggling bureaucrats themselves, aspects of discretion and autonomy in the public work place, and issues of power, control, and leadership in street level settings. Though as shown by other scholars (Hupe et al, 2015) there is currently a renewed interest in showing how the street level logic can be applied to other contemporary policy implementation and public service delivery situations. Thus, this research offered an original exploration of the utility of SLT to explain the

dynamics of how weak policy-notions are experienced and operationalised in contemporary street level settings.

9.5 Original findings and knowledge contributions

As noted in Section 9.4 this research has helped address four particular research gaps. These gaps were met through a number of original and impactful conclusions that have made new contributions to existing literatures. The enhanced explanation about the nature of *ecosystem science* (Chapter Six) is original where none of the existing literatures in the nascent area have sought to understand why this confusion between terms and terminology exists as it does, and whether on balance it is a positive or negative state for enabling the use and comprehension of individual policy-notions. These original findings offered empirical evidence to make an original contribution to this literature (Waylen et al, 2014[A]; Scott et al, 2014; De Lucia, 2015 etc). This contribution may offer wider impacts upon understandings about why environmental ideas are confused and appropriated (Helm, 2000), and how different policy-notions are promoted by epistemic champions to policy-makers.

This thesis also offered an original 'thick' investigation into how an ecosystem approach was being implemented in practice within a single English BR case study. This was the first time that a UK biosphere reserve had been used as a case study to explore this phenomena. It found that whilst the BR appeared to be utilising a strong alignment towards the social principles, its consideration of the ecological principles was less pronounced, except for the prioritisation of ecosystem services which it appeared to be excelling at. Similarly, which it was finding it difficult to meet the economic principles, this was at odds with the BR's ongoing proclivity for trailing new market based approaches to integrated natural resource management (including natural capital approaches). The conclusions drawn from Chapter Seven offer an original contribution to both the ecosystem approach operationalisation literature (Smith and Maltby, 2003; Phillips and Joao, 2017), the limited UK MAB literature (Price, 2002; Price et al, 2010), and the cross over between them (Flitner et al, 2009). The conclusions drawn from this element of the research could have impact where they speak to UK MAB about how an ecosystem approach is continuing to be used

and promoted within UKMAB as a framework for integrated natural resource management. Although earlier publications highlighted the synergy between these two concepts (UNESCO, 2000), the conclusions of this research highlights how this is an 'ongoing journey' that may benefit form greater engagement from UKMAB and or other partners.

This thesis drew original conclusions about the theoretical and practical utility of using SLT to offer explanations about the bottom-up implementation of weak policy-notions. It was found that different organisations were implementing aspects of an ecosystem approach based upon different street level dynamics. By showing that weak policy-notions (such as the ecosystem approach) are critically influenced at the street level by other organisational and macro-dynamics (i.e. *austerity*, playing the contracting game) it showed that the key decisions about implementation of weak policy-notions are still being influenced by street level actors. Considering the power that these street level actors appeared to have over deciding if and how they wanted to use aspects of an ecosystem approach, it can be seen that in many regards they remain the ultimate arbiters of its implementation in this context. This understanding makes a new and original contribution to the SLT literature. If SLT can be used in this way to explore how other weak policy-notions are being implemented in street level domestic settings, then other policy or regime implementation problems that have thus far avoided a political science treatment may be amenable to SLT analysis. Indeed, conceptualising the operationalisation of internationally-originated, weakly enforced policy-notions may have implications (or offer a new perspective) on aspects of regime effectiveness theory. Therefore, it might be considered that this research has a wider influence and impact upon how international relations scholars consider the implementation dynamics of international regime.

Finally, it is suggested that this study's research design and methods has an impact on the poorly understood but evolving field of domestic ecosystem approach evaluative methodologies (Waylen et al, 2014[B]). Similarly to Phillips and Joao (2017) this study utilised a qualitative mixed method approach that was fundamentally focused around the individual Malawi principles (and points of guidance). This is important where there is little contemporary consensus on how to undertake

ecosystem approach evaluations (Waylen et al, 2014[B]). However, many of the UK institutions seeking to operationalise an ecosystem approach are currently seeking to understand common methodological forms for internal and external evaluation (Kirsop-Taylor, 2018[A]; Kirsop-Taylor et al, 2018). Thus, the use of a particular form of thick qualitative methodology undertaken here may add to this emerging discourse and practice. That said, undertaking this research led to a number of important reflections on the choice of methodology, these are discussed next in Section 9.6.

9.6 Methodological reflections

The choice of methodological approach used in this thesis was based upon a small selection of other studies (Brodkin, 2003), and largely relied on the 'methodological principles' gleaned from the literature review seen at the start of Chapter Five. Critically, evaluation of an ecosystem approach was found to be complex (Waylen et al, 2014[B]; Phillips and Joao, 2017; Kirsop-Taylor et al, 2018); and this multi-disciplinarity always spoke to a qualitative research design (as per Waylen et al, 2014[B]). As the complexity of evaluating ecosystem approaches became apparent, so too did the need for a rich and 'thick' explanation of the *implementation deficit*; which led to the methodological consideration of 'thick' ethnographic approaches (Adger et al, 2011). Thus, a qualitative research design that incorporated methods of semi-structured interviews, document reviews, and partnership observation (as per the recommendations of Brodkin, 2003; and Phillips and Joao, 2017) was selected and used. On reflection, this choice of methods was deemed broadly successful. That said, after a degree of reflection, a number of methodological insights became apparent:

1. Although the use of national-scale 'elite' participants was a late addition to the methodology, in retrospect it was a good decision, as these ten participants added significant contextual insights that provided comparisons and contrasts between the local and national scales. In particular, they offered a degree of insight into the multi-level nature of transposing the ecosystem approach as a policy-notion.
2. The early and consistent engagement of organisational gatekeepers was also a positive exercise, as they brought benefits in terms of access, contacts, documents

and important insider knowledge about their organisations and the dynamics of the BR partnership.

3. The thematic analysis stage made it clear how sampling more heavily from individuals within organisations, as opposed to their managers, might have offered deeper insights into the 'final street level'. Certainly, street level investigations can be multi-level (Meyers and Vorsanger, 2003; Hupe and Hill, 2007; Ellis, 2011), and offer insights into the behaviour of mangers as well as workers (as per Brodkin, 2003). Indeed, the lack of multi-level consideration is contemporarily seen as a flaw in Lipsky's original conception (Evans, 2011), and so this study should have offered greater consideration of the opinions of workers. Such a greater consideration might have added depth to the data, offered intra-organisation multi-level insights, and deeper understandings of the contemporary challenges to street level behaviour.
4. This research did not utilise a formal 'pilot' interview and, in retrospect, this might have offered a degree of value. Certainly, the semi-structured nature of the interviews and the free flowing questions and answers might not have benefitted from this, but the overarching structure of the questions (Annex E) might have been improved through a pilot interview.
5. Despite the large BR-scale group of cases (Table 5.2) this was predominately comprised of 'insiders' which may have led to a bias. Tongco (2007) has suggested that it is important to consider that purposive sampling has an inherent bias that cannot be removed, only highlighted by the researcher and considered in their results. As Palinkas et al (2015) suggests purposive sampling reduces: 'the generalisability of findings by minimising the potential for bias in selection'. Therefore, it must be considered how the purposive sampling strategy employed, and the predominately 'insiders' that were interviewed may have introduced a degree of BR partnership insider sampling bias.
6. Although the qualitative approach yielded many interesting and original results, evaluating implementation of an ecosystem approach has the potential to be very complex, and there were many other ways the methodology could have expanded or enhanced to capture this. Waylen et al (2014[B]) conjecture the many other facets of an ecosystem approach that might have been considered. Indeed, the approach undertaken here certainly had 'room for enhancement'; and this has since been

taken forwards in the authors follow-on research with the Centre for the evaluation of complexity across the nexus (Kirsop-Taylor et al, 2018).

The final points given above (points five and six) suggests how this study could have used an alternative methodological design. Indeed, it must be noted how overall, on reflection, this thesis displays a number of limitations, and these are discussed next in Section 9.7.

9.7 Limitations of this thesis

Despite the significant original contribution made by this thesis it was, on reflection, also limited conceptually and empirically in a number of key areas.

This thesis opted to utilise an experimental application of the SLT framing. There is a significant and growing contemporary research discourse (Hupe et al, 2015) exploring and expanding the boundaries of SLT that this thesis sought to offer a contribution towards. Whilst the case for the original contribution has already been made (Section 9.5), there are a number of conceptual limitations to the approach taken that need to be highlighted and addressed. Firstly, and as articulated in Section 4.4.5, there are challenges with drawing lines of causation and connection between policy-makers to policy-consumers for policies that are 'weakly' articulated, promoted, enforced, and monitored. This conceptualisation of SLT frames street level problematisations in terms of the 'policy implementation journey' rather than the 'actions and lived experience of the bureaucrat'. This challenge also represents one of the more substantive issues of applying domestic policy implementation logics to international regime effectiveness 'problems' (Victor & Raustiala, 1998; Young & Gasser, 1999). Certainly, the cascading multi-level policy implementation chain (as per Pressman and Wildavsky, 1973) has been well-established in this case (Figure 2.3). Though the degree to which the implementation of this regime can be said to manifesting at the street level under SLT dynamics might be considered conceptually weak. Limiting this thesis' to only broad and non-discrete conceptualisations of 'the street level forces' effecting implementation (as established in Section 4.4.5) might be problematic to the wider street level academic community for a number of reasons. Sætren and Hupe

(2018) have recently argued how broad 'direction of travel' for implementation research (including street level research) is developing through time to be increasingly grounded in complex (and highly specified) analytical methodologies leading to greater rigor and causal explanations of implementation behaviour. In street level studies the increasing proclivity towards analytically complex methodologies have been argued to offer richer and causal explanations about how and why street level actors use dynamics such as their discretion (e.g. Gofen, 2014). The methods and conceptualisations from these complex and analytical approaches might have been utilised for addressing this case. For example, an accountability regimes-based approach (Thomann et al, 2018) could have be utilised to understand how plural accountability pressures create conflict and dilemma in public agencies and actors, and EVSO's, with increasingly hybrid pressures and identities (as per Section 8.3). Similarly, the conflicted 'nature of role' played by individual actors within the hybrid public and VSOs regards different aspects of the Malawi principles could have taken a more prominent position in Chapter Eight (as per Sager et al, 2014). Alternatively, the role(s) of discretion could have been viewed explicitly (Hupe, 2015), or as driven by the economic incentives placed on bureaucrats (and VSOs) for policy implementation and convergence (Brodkin, 2011).

However, in its defense, this thesis' conceptualisations of discretion and conditions of work were *necessarily vague* and *exploratory* congruent with the iterative logic employed as part of the sensitising strategy outlined by Morse (2003) and Faulkner (2017) (in Section 5.2). In short, where existing theory and research did not help construct firm expectations of understanding about the dynamics that would be seen in this case, a broader and vaguer conceptualisation of the street level construct was required (though again, this judgement was predicated upon the subjective interpretation of street level studies being 'expansionary' in nature). This thesis sought to capture and describe a broad spectrum of discretionary behaviours and experiences which might offer original insights into the fundamental natures of discretion and autonomy in public and voluntary environmental organisations as they seek to translate and operationalise weak policy-notions (regime). As noted above, bridging the regime effectiveness and policy implementation literatures can be conceptually challenging (Victor et al, 1998:3; Galbreath & McEvoy, 2012), but such

'full policy chain' explanations offer significant potential for explaining multi-level policy implementation challenges. Moreover, by using these broad descriptions of the discretionary and organisational conditions effecting implementation behaviour a number of overarching themes of implementation behaviour at the street level were revealed. It was shown how the 'discretion to implement' afforded by the nature of ecosystem approach (as weak domestic policy in England – Section 2.7) might have once been beneficial to its implementation by policy addressees during times of public largesse; but that under the contemporary UK public *austerity* policy regime (May, 2015) with services retrenching and the discretionary projects and funding (once available to bureaucrats) contracting (Gray & Donald, 2013) the 'discretion to implement' is working to the ecosystem approach's detriment. This is a valuable and original finding that adds a new dimension to the SLT canon by highlighting the elemental power that wider public policy regime (e.g. May, 2015) have in effecting the implementation of international regimes that have historically relied on the discretion and autonomy of domestic public bureaucrats at the street level. This finding has utility for the field of SLT where it presents a coherent understanding bridging regime and policy implementation epistemologies across multi-level governance; by showing how internationally-originated expectations of domestic compliance with regimes are effected by sovereign domestic public policy regime. Thus, the wider impact of this study is to highlight (or re-articulate) to the creators of international regime the need to critically consider the street level actors upon which so many of their regimes rely for discretionary implementation; and need to consider how these will be effected by domestic wider elemental public policy regime, such as *austerity*.

This research opted to sample a single case study area which led to a 'thick' and granular understanding (Adger et al, 2011) about the degree of ecosystem approach implementation within a single case. Although Sætren and Hupe (2018: 558) have taken the reduction in single case studies of policy implementation to be a normatively positive development (for rigour and comparativeness), others continue to shine a light on the exploratory and explanatory value of single case approaches to street level dilemma (Brodkin, 2011). Compared to the wider national sample frames of Waylen et al (2014[A]) and Scott et al (2014) this meant that, what this study gained in granular depth and detail it (potentially) lost in external validity. That said, wide generalisability

was not an explicit objective of this research or the utilised research design. Thus, although this research has led to original and potentially significant conclusions, the degree to which these can be inferred about other integrated NRM designations may be limited.

Although this research did lead to understandings about the complexity of implementation in the case study, these complexities may be idiosyncratic, and therefore implementation complexity may manifest in a heterogenous fashion across other cases. Indeed, whilst single case study approaches having broad contemporary utility for offering generalisable findings (Flyvberg, 2006), as Burnham et al (2008:171-180) notes, making inferences and drawing conclusions about political phenomena from single case studies still remains a challenging and precarious activity. Cognizant of Burnham et al (2008) the findings of this thesis do hold external validity in certain aspects, and to certain other cases within UKMAB (as per Table 3.2). Considering the commonalities across WNBR (Price, 2002) (Section 3.3), compounded by the common governance forms enjoyed across much of EuroMAB (Hambrey et al, 2008), it is concluded that the findings are likely to be broadly valid across the 302 biosphere reserves in 32 countries that comprise the EuroMAB grouping. That said, the most appropriate methodological approach to testing this claim to external validity would likely emerge from a form of qualitative comparative analysis which was not undertaken here. From a more expansive perspective the conclusions of this thesis *might* have wider validity across other international MAB regions or in other NRM cases across the UK and Europe, but this thesis is not going to make firm claims on this. Critically, the 'exceptional' nature of the selected case study within UKMAB (argued in Section 3.3.5) meant that the external validity of the findings across WNBR must be contextualised. Its broadly exceptional nature might mean that these findings might be treated as exceptional, and not typical across to other UKMAB designations (Mabry, 2008: 222-223). However, the case for the external validity of the findings and conclusions is made based upon the contested nature of the case selection decision to ascribe this BR as 'exceptional' (Section 3.3.5). With regards to the implementation of an ecosystem approach, this case study was broadly considered to be a typical case within UKMAB, in that it obeyed common and disabling structures of UK natural resource management governance (i.e. disaggregated land ownership, macro agri-

environmental policy framework, lack of statutory purposes, mis-aligned governance scales etc). This meant that the BR shared many of the similar fundamental, structural, cultural, and governance dynamics (to other UKMAB sites) which disabled its consideration of an ecosystem approach. In this way the conclusions of this thesis may yet have validity to other settings across UKMAB, and perhaps into elements of EuroMAB.

9.8 Recommendations for the consideration of an ecosystem approach

The findings and conclusions of this research pointed towards a series of recommendations for both national policy-makers seeking to implement the ecosystem approach, as well as for the land managers within the case study BR.

9.8.1 Recommendations for the biosphere reserve

This thesis has identified a limited number of improvements the BR could make to align closer towards an ecosystem approach. Certainly, it needs to be recognised that an ecosystem approach may not be the most appropriate approach for the case study BR, or indeed for natural resource management settings in the UK at all. That said, the participant discourse suggested that members of the BR did have a broadly positive regard for the idea of an ecosystem approach as an integrated natural resource management framework to aspire towards. Thus, these recommendations are all made under the framing of the ecosystem approach being concluded to be an appropriate and desirable framework for the BR.

Biosphere recommendation One: Embrace a natural capital approach

The results of this thesis found that despite many critiques and individual concerns about natural capital approaches to management, that these approaches were still viewed by a majority of organisations and individuals as offering significant potential for reconciling economic considerations and natural resource management within the BR. There are significant literatures supporting and critiquing natural capital approaches, but, on the whole, participants in this case study felt that they held ideas

of certain value. Indeed, this thesis has been conscious to highlight the very real differences between an ecosystem approach and ecosystem services (and natural capital). That said, the results suggested that a wider adoption and embracing of natural capital approaches within the BR might go some way to improving the consideration of economic considerations in BR management practice; and therefore supporting its wider adoption and alignment towards an ecosystem approach. Whilst this might sound like a contradictory position, this means a short-term alignment towards the natural capital agenda in the long-term interests of undertaking an ecosystem approach. Thus, the first recommendation that the BR partnership could undertake to improve its alignment towards the ecosystem approach is to embrace the new governmental zeitgeist for natural capital in the interests of better reconciling economic considerations into management practice (a particular challenge identified in Section 8.9). It was found that the BR has already started a significant programme of projects and activities that align with natural capital approaches to management (Section 7.5) including the accolade of being selected as one of the first locations in the UK to trial aspects of the 25 year environment plan and its focus on natural capital approaches. In many ways the BR's alignment with these approaches and the overarching narrative of natural capital is pragmatic and forward-thinking considering that natural capital approaches enjoy a great deal of contemporary currency with national policy makers and funders (Kumar/UNEP, 2017). However, this thesis also found that a significant number of participants were not enthusiastic about natural capital and viewed it as a temporary fad to be endured rather than a fundamental shift in the way the UK undertakes land management policy (DEFRA, 2018).

Based upon the interview discourse with national-scale elites and the BR management team it is concluded that trying to showcase the utility of natural capital approaches may be beneficial to convince more stakeholders of the utility of natural capital approaches. Whilst nearly all participants logically accepted the inevitability of natural capital as driven top-down by government many were still conceptually uncomfortable and unamenable to natural capital approaches. From a top-down perspective of policy implementation, the discomfort or reticence of final implementers should not matter, so long as they follow the 'chain of command' and obey their instructions (Parsons, 1995), however from a collegiate bottom-up perspective, 'persuading and carrying'

stakeholders is critical, as in carrying the BR partnership members to overcome their intrinsic reticence to natural capital approaches. Thus, there is scope for both a recognition of the power of bottom-up forces by the promoters of natural capital, and for the BR executive and hub team to explain and persuade the other partnership members towards acceptance of natural capital approaches in the long-term interests of building an ecosystem approach based strategy.

The most under-represented aspect in the overall 'BR ecosystem approach' characterisation were the economic principles. Thus, greater engagement with natural capital approaches has the potential, in theory, to help the BR move towards a more balanced iteration of an ecosystem approach (especially in terms of enhancing principles four and five). Certainly, natural capital approaches should be seen as a replacement or alternative approach to an ecosystem approach; but, that they should be seen as an aspect of taking an ecosystem approach that is currently being endorsed by policy makers and is a weakness of the BR's overall balanced ecosystem approach interpretation. In this way working for a closer alignment with natural capital approaches could support the larger outcome of achieving a balanced ecosystem approach across the BR. Whilst this may be already happening (at time of writing), and is already the stated position of the BR executive, the challenge is to 'persuade and carry' the rest of the partnership in this endeavour.

Biosphere recommendation Two: Biosphere reserve stakeholder engagement strategy

An important point discussed by participants was the degree to which the BR currently seeks to engage with stakeholders in an ad-hoc and situational-fashion. Whilst participants were keen to stress that, thus far, this had been a successful strategy as it had allowed greater flexibility and responsiveness; it may now be appropriate to consider the engagement of all stakeholders through a systematic stakeholder engagement strategy. Both the general project management (Svendsen, 1998), and natural resource management literatures (Polonsky, 1995; Reed et al, 2009), are emphatic about the value offered by 'stakeholder engagement strategies'. Indeed, there is a significant literature exploring why the use of this would be of value to a project such as the BR (Pomeroy and Douvere, 2008; Stoll-Kleeman and Welp, 2008;

Schultz et al, 2011). Thus, the creation of an appropriate stakeholder engagement strategy may offer a potentially lower-cost but medium-impact recommendation that could deliver value to how the BR engages with external stakeholders.

Recommendation Three: Renewed focus on community engagement in decision-making

The third recommendation suggests that the BR refocus its efforts towards situating decentralised community based decision-making (i.e. community based management approaches) at the heart of its management plan and strategic activities. The natural resource management literature suggests that robust models of community-based natural resource management within biosphere reserves are both possible (Pollock, 2004; Catibog-Sinha and Wen, 2008; Kent et al, 2012) and are a growing trend within WNBR (Stoll-Kleemann et al, 2010). The case study BR partnership have already spent decades trying to implement a programme of decentralised community based management (engagement with Beaford, schools programme/learning strategy etc); though participants suggested that achieving broad and deep community engagement has proved more elusive. That is not to say that community-based management is theoretically an impossible ideal (Leslie, 2015), but that within this BR it has proved particularly challenging. On the face of this challenge participants discussed the poor BR brand recognition within the local community (Coetzer et al, 2014; D1:71) which was driving the challenge of attracting community members into the working of the BR beyond the 'usual faces' (P8).

Beyond the 'peripheral' brand challenge participants articulated how key to the challenge lay in moving beyond community-based engagement to issues of decentralisation and subsidiarity. Participants suggested that decentralising actual power over decision-making to community members is a far harder challenge, and can often end in disappointment (Blaikie, 2006); especially where the BR is subjected to both 'push' and 'pull' factors effecting its efforts at decentralisation. Much of the government rhetoric and pressures promotes decentralisation and subsidiarity of natural resource decision-making. Whilst from a certain position the BR itself might be seen as a decentralised governance entity participants noted how they experienced pressures to decentralise further towards 'citizens' and 'communities'. That said, a

number of factors and most notably the prevailing *austerity* agenda is making them reticent to decentralise or devolve power further to 'citizens' and 'communities'. It was also noted that the movement towards greater community-based management might offer the BR an avenue for delivering certain activities and functions that they cannot any longer afford to deliver. Thus, the third recommendation suggests that the BR critically re-considers its aims and actions towards decentralisation and the subsidiarity of power over decision-making within the BR. It is suggested that it utilise its next UNESCO periodic review (as per Section 3.1.3 or Price et al, 2010) to conduct an internal re-assessment of the attitudes and opinions of its stakeholders and partnership members towards the theory of decentralisation, leading to new practical activities that could drive subsidiarity into the BR management plan. For example, it might consider community-based, participatory, decision-making forums (Fish et al, 2011), or opening up its major decision-making processes to community hustings (Selin and Chavez, 1995). Certainly, there are now tools in the public realm to support such activities (Scott et al, 2014; NEAT, 2016); and the literature describes many different tools to drive greater decentralisation into natural resource management partnerships. In conclusion, participant discourse suggested that 'there was still a long way to go' (P17) in terms of engaging communities and citizens from the land between the moors in management decision-making. The conclusions of this thesis suggest that a re-focused effort on driving new decentralisation-focused actions and targets into the BR management plan might go some way to moving this agenda forwards.

9.8.2 Recommendations for national policy makers

In addition to the three recommendations aimed at BR there is one main recommendation articulated for English policy makers:

Policy recommendation One: Continue a programme of English ecosystem approach monitoring

The interviews with the national-scale participants led to a number of important contextual understandings. Perhaps the most congruent and commonly expressed opinion from this cohort articulated the critical need for an ongoing national programme of monitoring and evaluation. This would not just support understandings of how England continues to meet its international obligations (towards integrated

management), but it would also support the many English communities and natural resource partnerships seeking to operationalise an ecosystem approach in practice. Therefore, based upon participant requests, it is recommended that the government, Defra, or Natural England institute a replacement for the *outcome 1C self-assessment* (seen at Annex B). Both the Scottish and Welsh devolved governments have committed to programmes of evaluation and monitoring of an ecosystem approach (see Kirsop-Taylor, 2018[A]). With the discontinuation of the *outcome 1C self-assessment* in 2017 the ability of English projects and designations to understand their alignment towards an ecosystem approach will be diminished. Certainly, there will be some support given through the ongoing work of NEAT, but without a structured and funded programme of evaluation the momentum gained thus far might falter. In the spirit of commitment to the CBD, and congruent with the UK's pre-eminent global position as a leader in environmental governance innovation and practice, England should continue to monitor, evaluate, and support the long term use of an ecosystem approach. As this thesis has highlighted, there are potentially many willing partners in England who might support this evaluation programme, and accessing that fund of good will and interest could go some way to offsetting the cost of such a programme.

9.9 Towards a future research agenda

This thesis has already sporadically articulated a number of findings and conclusions that point towards a future research agenda. These points are brought together and presented as a unified research agenda in Section 9.9:

9.9.1 Research agenda item One: Comparative analysis.

As noted in Chapters Five and Seven the 'thick' qualitative methodological approach undertaken in this research led to a broad characterisation of the 'form of ecosystem approach' being operationalised in this case. This method could potentially be replicated and used to conduct other 'thick' qualitative analyses about the degree and form of ecosystem approach implementation in other biosphere reserves in WNBR. These comparative analyses could be utilised to further support the CBD's efforts to consistently understand the socio-geographical dynamics driving different 'forms' of ecosystem approach by different actors in different parts of the world; as well as help

UNESCO understand the degree to which it is operationalising integrated natural resource management in practice. Overall, this could support the renewed and revitalised CBD agenda for understanding and promoting the domestic implementation of their *regimes* through research exploring comparative existing implementation, the 'path' towards greater implementation through time, and enabling actions to drive greater implementation.

9.9.2 Research agenda item Two: Applying SLT to voluntary sector.

This thesis found that SLT has the potential to yield insights into how the EVS are, in part, acting as the final arbiters of policy implementation at the street level. Ellis (2011) highlights how the current direction of public procurement is towards greater contracting of services and projects, and so understanding how SLT might continue to offer utility for understanding this new field of public policy implementation is important. It was hoped that the street level results of this thesis used to catalyse further academic enquiry in this field and this in ongoing in Kirsop-Taylor and Russel (2018). Other scholars may consider how the voluntary sector is acting at the street level in contracted projects as well as services; and especially the EVS which has historically been the subject of little academic enquiry.

9.9.3 Research agenda item Three: Applying street level theory to other weak policy-notions.

The findings of this study have shown how SLT can be used to offer explanations of how and why weak policy-notions are being implemented at the policy-practice interface in contemporary public administration settings. As a means of both cross-validating of the findings of this research, as well as advancing the evolving field of street level studies even further street level frames should be applied to other sub-fields of public policy implementation to see if it continues to offer original and significant insights. The ecosystem approach has been applied to other sub-fields as a framework for structuring *systems*-based environmental policy frameworks (e.g. climate change mitigation poverty alleviation), and these, as well as other different fields (e.g. education, healthcare) might prove particularly fertile in the initial stages of such studies (Forget and Lebel, 2001; Waltner-Towes et al*,* 2003; Lebel, 2003; Dakubo, 2004; Charland, 2011; Sloan-Wilson et al, 2017).

9.10 Concluding remarks

Global biodiversity is in crisis, with the *Holocene extinction* event leading to extinction rates of a thousand times more than the natural rate (Pimm et al, 1995). Integrated natural resource management, and especially an ecosystem approach to management, has been championed by the leaders of global environmental governance as part of the suite of holistic solutions to this crisis. This thesis started from the position of pondering why the ecosystem approach of the CBD was still struggling to be implemented in domestic settings. Through the course of the research a number of key findings were made, and conclusions were drawn. The broad implications of these findings have ramifications for how weakly articulated and enforced policy-notions and regime, such as the ecosystem approach are implemented in domestic settings. These findings have importance for how the ongoing implementation of an ecosystem approach is considered by policy makers, as well as how street level natural resource managers might hold the key to its successful implementation.

Evaluating implementation of an ecosystem approach has been complex and challenging. It has required both a multi-disciplinarity, and a consideration of *systems*-thinking that crosses schools of thought and modalities of empirical investigation. That said, the field of political science has been shown to offer significant new insights into how and why its implementation at the street level may be occurring. Finally, the findings of this research suggest that street level frames might be an important emerging field of consideration for the actors of global environmental governance to consider. The final implementers at domestic policy-practice interfaces continue to exert power in shaping policy outcomes, even poorly enforced and articulated policy-notions that originate in global environmental governance.

Annex A. Compliance and implementation bodies of the CBD

Implementation between international and national actors is broadly articulated in global environmental governance in terms of 'compliance'. According to UNEP (2001:1) this is 'the fulfilment by the contracting parties (UK Government) of their obligations under a multilateral environmental agreement (The CBD)'. Once a party agrees to be bound by an MEA, it will enter into force through ratification (dependent on whether the state is monist or dualist), though responses to compliance can vary. Indeed, states often comply with their commitments sporadically (Perkins and Neumayer, 2007; Brans and Ferraro, 2012) which 'can be arrayed on a spectrum – with spontaneous compliance at one end and, regime enabled compliance in the middle, and induced (enforced) compliance at the other end' (Peterson, 1997: 117). Often the convening agency to an MEA seeks to compel compliance towards the behavioural and policy changes agreed to in the agreement. There are two broad formats for inducing compliance 'an enforcement orientated approach (type one) based essentially on the threat/and or use of sanctions as a means of deterring non-compliance, and a management orientated approach (type two) based essentially on reducing ambiguity regarding obligations themselves, creating positive incentives to comply prior to an incidence of non-compliance' (Frischmann, 2004:148). Theoretical debates over which approach is preferable remain important (Raustiala and Victor, 1998; Tallberg, 2002; Dolle, 2014), though characteristically *type one* compliances tend to be legalistic (Fisher, 1981; Neumayer, 2007), and typifying a *hard power* approach (Simmons, 1998); and *type two* approaches are more management orientated (Jacobson and Brown-Weiss, 1995; Simmons, 1998; Frischmann 2004:148), and using soft power approaches (Wilson, 2008). In practice the majority of historic MEA have been *type two* compliances, which states tend to prefer (Carter, 2007:263), though they predominately lead to poor compliance outcomes, as articulated by the UNEP (2007): 'In most MEAs, particularly framework conventions, compliance mechanisms tend to be weak or non-existent, with self-reporting and monitoring as the standard norm'. This is not to say that *type two* compliances cannot produce positive compliance outcomes (Frischmann, 2004:160; Neumayer, 2007; Dolle, 2014; Susskind and Ali, 2015), only that the research suggests that they are

weaker and less likely to be successful, even if they are easier to get states to agree to initially. The CBD works extensively with an international network of stakeholders and partners to deliver its objectives. Internally it has a number of arms which support implementation, and which are discussed sporadically throughout this thesis.

SBSTTA. Established under article 25 of the CBD, the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) are an open-ended intergovernmental scientific advisory body attached to the convention. As already mentioned they act in a similar format to the SBI. The purpose of the SBSTTA is to 'provide the COP and, as appropriate, its other subsidiary bodies, with timely advice relating to the implementation of the CBD'.

CHM. The Clearing-House Mechanism has been established under Article 18.3 of the CBD, and further to decision X/15, its mission is to contribute significantly to the implementation of the CBD and its Strategic Plan for Biodiversity 2011-2020. It supports implementation through effective information services and other appropriate means in order to promote and facilitate scientific and technical cooperation, knowledge sharing and information exchange, and to establish a fully operational network of Parties and partners (CBD, online). Moreover it utilises three main tools for this end, 1) the CBD website, 2) a network of national clearing house mechanisms and 3) various other partner institutions. The UK has its own CHM, the details of which can be seen at its website http://uk.chm-cbd.net

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TBG T+F Group 3 – Ecosystem Approach Self-Assessment Criteria and Method

Notes on completing the self-assessment:
The criteria has two parts:

- Part 1 - 'Does Outcome 1C apply to you?'
  This is a screening stage – do you meet the scope of 1C?
- Part 2 - 'How is your partnership using the ecosystem approach in your work?'
  This is the self-assessment stage
- The questions in Part 1 and 2 refer to a 'Plan'. This can be a partnership management plan, delivery plan or project plan – *e.g. National Park Management Plan, AONB Partnership Management Plan, NIA Business Plan*

Part 1 – Does Outcome 1C apply to you?

If you meet all 5 of these questions then proceed to Part 2

Recording your partnership's response to Part 1:

- Name of partnership or project:
- Completed by who? (name and organisation):
  e.g. the officers who drafted the response on behalf of the partners
- Date when the partnership signed off the response to Part 1:
  This is to demonstrate this is a response from across the partnership

Question about your partnership or project	***Why are you being asked this?***	***Examples***	***Your partnership's response.....***	
			Your reply to the question	**Your reasons for the reply** - why you responded YES or NO

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				- be specific if you can
1Are you a **partnership seeking to deliver multiple outcomes**?	The ecosystem approach involves a range of partners working in partnership together across sectors and interests to agree management of an area. A partnership can be a formally constituted partnership, or a more informal partnership that is working together collaboratively. A key point is that planning and action is done together – see Q2.	Types of partnerships: • National Park • AONB • NIA • Living Landscapes • Futurescapes • Catchment • Other landscape scale/large area partnerships	**YES or NO**	*e.g. give name of the partnership and say how long it has been in operation*
2. Does your partnership have a **shared plan** covering the project or partnership area?	Having a shared plan for management of the area demonstrates that joint decisions have been taken and joint action planned. Your partnership's plan will help you answer the questions in Pt 2.	Types of plans: • National Park Management Plan • AONB Management Plan • NIA Business Plans • Living Landscape partnerships • Futurescapes projects • Catchment Management plans • Local Nature Partnership strategies • Heritage Lottery Fund Landscape Partnership • Other landscape scale /large area plans	**YES or NO**	*e.g. give the title of the plan, and say what period it covers and when it was agreed between the partners*
3. Does your partnership	Ecosystems are usually large scale and cover large parts of a	Landscape scale partnership	**YES or NO**	*e.g. say what area your partnership covers and*

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operate at **landscape scale**?	landscape. The ecosystem approach is about managing the function of ecosystems. The partnership should be operating at a scale that can influence the whole/a significant part of the ecosystems Generally smaller scale sites (e.g. many nature reserves, SSSIs and Local Wildlife Sites) may be part of a larger landscape scale partnership, and will not be assessed on their own. For **specific sites or groups of sites** to be assessed for the ecosystem approach they **should cover a continuous area of at least 10,000 ha** *[Links to CBD Principles 2, 3 and 7]*	areas as above.		*give the approximate area of operation*
4. Are you working in partnership in an integrated way at landscape scale to benefit **both biodiversity**	The recent policies that promote the linking of action for nature and benefits for people (Lawton Review; NEWP; Biodiversity 2020) all recognise the value of nature to people. Improving the health of nature will increase the benefits for people (ie ecosystem services). Management should		**YES or NO**	*e.g. say how your partnership combines management for both biodiversity and other benefits for people (ie ecosystem services) – for example, via an integrated management plan and a cross-sector board*

and ecosystem services?	combine improving both together – not at the expense of each other.			
5. Are you working in partnership to deliver **multiple ecosystem services**?	The recent policies also highlight that sustainable use involves integrated management across a range of interests and ecosystem services.		**YES or NO**	*e.g. say what sectors your partnership includes, and provide a list of partner organisations*

Part 2 - How is your partnership using the ecosystem approach now?					
Recording your partnership's response to Part 2: ➢ Name of partnership or project: ➢ Completed by who? (name and organisation): *e.g. the officers who drafted the response on behalf of the partners* ➢ Date when the partnership signed off the response to Part 2: *This is to demonstrate this is a response from across the partnership*					
Core Components of using the Ecosystem Approach *This is the **formal assessment section**. You must complete this to determine how your partnership is delivering for Outcome 1C.*					***Good practice in using the Ecosystem Approach*** *This **optional section** is about identifying good practice that exceeds the requirements of the formal assessment. This may be shared with other partnerships*
Questions – for you to assess how you partnership is using the Ecosystem Approach at the moment	***Why are you being asked this?***	***Your partnerships response.....*** **Your reply to the question – please rate your partnership for each question – 0, 1 or 2** **by highlighting the relevant number below**			***Your partnerships response.....*** For each question, what additional actions are you undertaking beyond the core component?
Question 1 – Is your partnership actively considering and planning for a wide range of environmental assets,	To understand how your partnership is considering the **ecosystems** and the **environmental assets**	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting*** ***=2***	**For example:** The current plan includes an assessment of a range of environmental assets The current plan assesses the integrity, function

within your partnership area (beyond biodiversity, landscape and geodiversity)?	that underpin them *[Links to CBD Principle 5]*				and health of ecosystems
Reasons for your response to Question 1 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 1** – *things your partnership is doing beyond what you have included in the adjacent box.*
Question 2 – Have you collated data to understand the most relevant ecosystem services in your partnership/project area? **Note**: *Natural England's Natural Character Area Profiles consider ecosystem services in each NCA, and can help with this stage – see toolkit.* *Prompt questions to help you*	To see how you partnership is you considering **ecosystem services** *[Links to CBD Principle 11]*	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting*** ***=2***	**For example:** Your partnership has assessed the ecosystem services in your area, and identified the priority ecosystem services which require action. You have a baseline document that sets out data for all the key ecosystem services in your area.

answer Question 2: *Considering the main ecosystem services is fine – but include a range across sectors.* *Have you collated data from partners – including local and national data? Using proxy data is fine where you do not have direct data.* *Have you got what you need? Have you identified the gaps in data for the ecosystem services in your area?*					
Reasons for your response to Question 2 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 2** – *things your partnership is doing beyond what you have included in the adjacent box.*

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Question 3– Are you involving a wide range of stakeholders and the local community in planning and delivering action for ecosystem services n your area, including those who benefit from them? *Prompt questions:* *Have you involved a wide range of relevant stakeholders from across different sectors (economic, community and environment)?* *Are they involved in developing the plan AND delivery of the actions* *How have you done this? – e.g. visitor surveys, consulting beyond the boundary of your partnership*	To understand how your partnership is **involving** relevant **stakeholders**, and the **beneficiaries and providers of ecosystem services**? *[Links to CBD Principles 1 +12]*	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting*** ***=2***	**For example:** The partnership is using a broad participation plan to include the range of stakeholders, including beneficiaries The partnership has identified who benefits from the key services and who/where provides them The engagement includes beneficiaries outside the project area (i.e. not just local)
Reasons for your response to Question 3 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 3** – *things your partnership is doing beyond what you have included in the adjacent box.*

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Question 4 - Is there a management plan with objectives that deliver multiple benefits for biodiversity and other ecosystem services through joint action? *Prompt questions to help you answer Question3:* *Have you identified the priority ecosystem services which require action?* *Have you considered tensions and conflicts when managing for the range of ecosystem services? Are you openly dealing with these?* *Is ecosystem integrity, function and health being considered? for:*	To see how your partnership is planning for future **management which is integrated and holistic**; combining the conservation and use of your local environment. *[Links to CBD Principle 10]*	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting***	**For example:** Your partnership has identified differences and conflicts in managing for a range of ecosystem services and is addressing them. The partnership uses a range of future scenarios to help address future changes/risks

• *hydrology* • *carbon storage and sequestration* • *nutrient cycling* *Have you considered linkages for ecological networks and ecosystem services beyond the partnership/project area?*					
Reasons for your response to Question 4 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 4** – *things your partnership is doing beyond what you have included in the adjacent box.*
Question 5 – Are you addressing the current and future risks, pressures and changes affecting the environmental assets in your area, and the ecosystem services they provide?	To understand how your partnership is addressing **key risks**, both for the local environment and the ecosystem services it provides. *[Links to Principle 6]*	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting*** ***=2***	**For example:** Your partnership regularly reviews and assesses the risks, pressures and uncertainties affecting the area, and feeds this into management. Your partnership has assessed the vulnerability of the area and environmental assets to climate change The partnership has mapped climate change

					vulnerability and adaptation needs
Reasons for your response to Question 5 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 5** – *things your partnership is doing beyond what you have included in the adjacent box.*
Question 6 - Are you considering the long term(10+ years) management requirements for delivering high quality ecosystem services from functioning ecosystems? *Prompt questions for Q7 -* *Are you working to improve*	To see how your partnership is taking a **long-term view** to management of the local environment *[Links to CBD Principles 8 + 9]*	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting*** ***=2***	**For example:** The partnership is assessing multiple and cumulative impacts on ecosystems in the area The partnership is improving ecological connectivity and resilience of ecosystems to benefit wildlife and ecosystem services

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long term ecosystem function? *Are you working to improve long term ecological connectivity?* *Are you planning to adapt ecosystems to climate change?*					
Reasons for your response to Question 6 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 6**– *things your partnership is doing beyond what you have included in the adjacent box.*
Question 7 - Are you using monitoring as feedback, to inform and	To understand how your partnership uses **monitoring to inform**	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting*** ***=2***	**For example:** The partnership is undertaking a monitoring programme that looks at a range of ecosystem

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adjust your management planning, actions and priorities? (i.e. adaptive management)? This can include qualitative assessment and feedback.	**future actions** *[Links to CBD Principles]*				services, and adjusts management in response Regular monitoring and assessment of the environmental assets AND ecosystem services is in place, using scientific and local knowledge
Reasons for your response to Question 7 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 7** – *things your partnership is doing beyond what you have included in the adjacent box.*
Question 8 – Is your partnership taking action to understand what ecosystem services people value from your project area, and using valuation to capture them? (remember values can be both monetary and non-monetary values?)	To see how your partnership is taking account of the **values people place on their local environment/landscape** – both monetary and non-monetary? *[Links to CBD Principle*	***Not started*** ***= 0***	***Progressing*** ***= 1***	***Meeting*** ***=2***	**For example:** The partnership is using valuation methods to inform decision making; such as – marginal valuation or full cost benefit analysis using the Green Book guidance. You are involving people who benefit from ecosystem services from your area in capturing

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Prompt questions for Q8 – *How are you recognising what people value? E.g. citizen panels, visitor surveys.* *What values are you looking at? E.g. economic, perception, cultural.* *What valuation methods are you using to capture and demonstrate these different values?*	*4]*				what they value. You are using values and valuation to help gain support for ecosystem management in your area.
Reasons for your response to Question 8 **Please give supporting evidence**–*e.g. refer to specific sections in a management plan or joint actions you are delivering*					**Your examples of Good Practice for Question 8** – *things your partnership is doing beyond what you have included in the adjacent box.*

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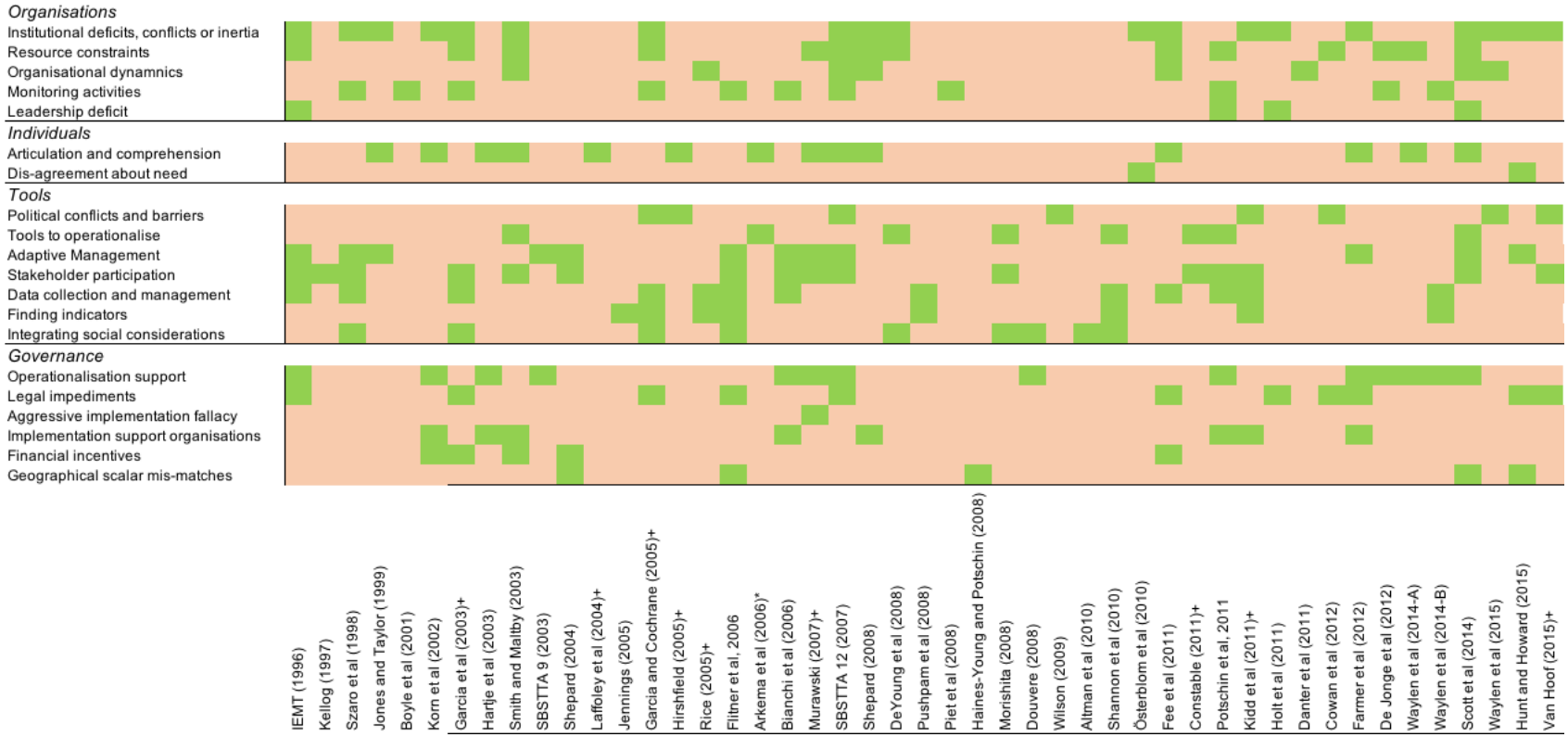
Annex C: Literature review of domestic scale barriers to implementation of an ecosystem approach policy-notion



Annex D. Documents collected

No	Document name	Type	Organisation
1	Biosphere reserve strategy 2014-2024	Strategy	UNESCO Biosphere reserve
2	Biosphere reserve river catchment plan	Management plan	UNESCO Biosphere reserve
3	North Devon biosphere reserve periodic review 2015	Audit	UNESCO Biosphere reserve
4	Biosphere reserve technical paper	Report	UNESCO Biosphere reserve
5	State of the North Devon UNESCO biosphere reserve	Audit	UNESCO Biosphere reserve
6	Biosphere reserve technical paper	Report	North Devon and Torridge district councils
7	Ilfracombe southern extension ecosystem service baseline assessment	Assessment	North Devon and Torridge district councils
8	Westacott ecosystem service baseline assessment	Assessment	North Devon and Torridge district councils
9	Wetland future forum	Report	North Devon and Torridge district councils
10	Northern Devon Nature Improvement area: progress report 2012-2014	Audit	Northern Devon Nature Improvement Area
11	UK Forestry Standard	Strategy	Forestry Commission
12	Winkleigh Community Plan	Strategy	Independent Participant

13	Partnership management plan	Management plan	Exmoor National Park
14	Outcome 1C self-assessment	Audit	Natural England
15	AONB 2014-2019 Management Plan	Management plan	North Devon AONB
16	Coastwise constitution	Strategy	Coastwise
17	Playing our part	Strategy	National Trust
18	Devon LNP Management Plan	Management Plan	Local Nature Partnership (Natural Devon)
19	North Devon and Torridge Local Plan (2011-2031)	Strategy	North Devon and Torridge District Councils

Annex E. Semi-structured interview generic structure

Part One – Introduction

1 Tell me a little about yourself?

2 What is your organisation, and your role in it?

3 How is your organisation constituted, how is it funded and is it to a greater or lesser extent an agent of government will?

4 Over the course of your career do you think best-practice in environmental management has changed, if so, what are the dynamics of this?

Part Two – Integrated Environmental Management

5 What do you think integrated environmental management may mean?

6 Do you or your organisation take an integrated approach to management practice?

7 That said, do you think transdisciplinary and integrated approaches to environmental management are either practical or possible at all?

8 What or who motivates you to use more integrated approaches?

9 What or who has the agency, legitimacy or authority to influence your alignment towards this?

10 What are the elements that should be integrated together in the interests of best-practice management approaches? – which 'bits' are integrated?

Part Three – The Ecosystem Approach of the CBD

11 What do you think the ecosystem approach is?

12 What are the main aspects or priorities of taking an ecosystem approach?

13 Do you think your description of what the ecosystem approach is consistent with what other environmental managers may say?

14 Do you think that ‘whatever taking an ecosystem approach’ is, that it is a flexible and fluid thing, or that it is fixed and static? Does this matter?

15 Is the ecosystem approach national policy, and what motivates you to consider it in your practice?

16 Does your organisation agree with this ecosystem approach conceptually?

17 Do you think that you, and your organisation, use an ecosystem approach in its practice?

18 Specifically, which of these principles were the most likely to be utilised in your practice, or in your experience (*shown Malawi principles*)?

19 What about the points of operational guidance, are these used in practice?

20 Are any of them not liable to be used in practice, – if so, which and why?

21 Are there any other actions or ideas from ecosystem approach that you would like to use, of would to have used, in your practice?

22 What if anything might be the enablers or disablers to you or your organisation using an ecosystem approach?

23 Does your organisation use or have any literature or documents which may highlight its use of the ecosystem approach?

Part Four – Street Level Bureaucrat behaviours

24 To reiterate, is the ecosystem approach something you feel you should be using, and where, if anywhere, does the agency towards using the approach originate from?

25 Who in your organisation has the power and responsibility for deciding how to respond to weak policies, such as the ecosystem approach

26 Do you feel that you, your organisation, or the wider environmental management practitioner community can choose how to put the ecosystem approach into practice?

27 Do you or your organisation feel any degree of pressure to use certain approaches to environmental management practice. If so, what are these and from which does the pressure originate?

28 What are your thoughts on there being multiple versions of the ecosystem approach used around the UK? Specifically, what do you think about England's unique version/response to the approach?

29 Do you individually, and organisationally, enjoy a degree of autonomy to choose what parts of integrated practice/ecosystem approach to use in practice?

Part Five – The role of the Biosphere Reserve

30 How would you characterise the Biosphere reserve with reference to its purpose, its strengths and weaknesses?

31 Broadly, do you think that the UNESCO biosphere reserves have been a helpful institution for trailing new environmental management practices such as the ecosystem approach?

32 How would you characterise the development and dynamics of the BR partnership as both a single entity and as a plurality of organisations working towards common purposes?

33 What more could these organisations, or the reserve itself, be doing to promote integrated environmental management practices within the landscape?

34 What is your view on the governance settlement for UK biosphere reserves, comparative to other countries, and how does this settlement affect, for good or ill, the effectiveness and success of the ND BR?

35 How has the biosphere reserve been affected by the changing political cycles, shifting agenda and imperatives seen since its inception. Specifically, how is *austerity* affecting its ability to do integrated management?

Annex F. Participant consent and information form

The Ecosystem Approach as a street level bureaucrat defined strategy for environmental management: a case study from the North Devon UNESCO Biosphere Reserve

This project is being undertaken by Nick Kirsop-Taylor, a Doctoral Researcher at the University of Exeter's Land, Environment, Economics and Policy Institute (LEEP) as part of his Doctoral Thesis. The study is researching how the ecosystem approach of the convention on biological diversity is being implemented and mainstreamed by English voluntary and public sector organisations. Specifically it is interested in the role that individuals at the 'street level' of implementing government policies play in what is, and what isn't, implemented.

The data gathered through this research will be used to offer new explanations about the role that street level environmental managers play in implementing non-statutory environmental policies, especially those related to biodiversity conservation. Further than this, it will add new understandings about how nation states implement internationally agreed environmental management best-practice, which is a central discussion in international collective-action responses to global environmental challenges.

This research is co-funded by the University of Exeter and the Food and Environment Research Agency. The information it collects will help to better inform the debate about the environmental management strategies be used in the UK, and specifically how the ecosystem approach of the Convention on Biological Diversity is interpreted and implemented. The results of this work will be used as part of a doctoral thesis, as well as to facilitate the creation of academic papers published in specific academic journals. It may also be used in a limited number of presentations and conference reports.

Contact Details
For further information about the research or interview data please contact:
Nick Kirsop-Taylor
The Centre for Rural Policy Research, Lazenby Building, The University of Exeter, Exeter, Devon, EX4 4PJ

M +44 (0) 7969 875544
NK305@exeter.ac.uk

If you have concerns/questions about the research you would like to discuss with someone else at the University, please contact:
Dr Duncan Russel, D.J.Russel@exeter.ac.uk

Anonymity
The data collected through this study (from both shadowing and interviews) will be held and used on an anonymous basis, with no mention of your name, we will however refer to the environmental management organisation of which you are an employee (if they give consent for us to do so). Your name will not be used for any internal reports given to your organisation following this research.

Confidentiality
Interview tapes and transcripts will be held in confidence. They will not be used other than for the purposes described above and third parties will not be allowed access to them (except as may be required by the law). However, if you request it, you will be supplied with a copy of your interview transcript so that you can comment on and edit it as you see fit (please give your email below so that I am able to contact you at a later date). Your data will be held in accordance with the (1988) Data Protection Act.

Data Protection Notice
The information you provide will be used for research purposes and your personal data will be processed in accordance with current data protection legislation and the University's notification lodged at the Information Commissioner's Office. Any data that is collected will be password protected and encrypted with the key known only to the researcher.

At the completion of this study all physical data records will be securely destroyed. The electronic records will be stored on the University of Exeter's password protected u-drive indefinitely. Your personal data will be treated in the strictest confidence and will not be disclosed to any unauthorised third parties. The results of the research will be published in anonymised form.

Consent
I have been fully informed about the aims and purposes of the project.

I understand that:

3. there is no compulsion for me to participate in this research project and, if I do choose to participate, I may withdraw at any stage;
4. I have the right to refuse permission for the publication of any information about me;
5. any information which I give will be used for the purposes of this research project and may include publications or academic conference or seminar presentations;
6. all information I give will be treated as confidential;
7. the researcher(s) will make every effort to preserve my anonymity.

.....……..……..

.....……..……..

(Signature of participant) (Date)

……

……..……

(Printed name of participant) (Email address, if you want view a copy of the interview transcript)

.....……. .....…….

(Signature of researcher) (Printed name of researcher)

One copy of this form will be kept by the participant; a second copy will be kept by the researcher(s).

Annex G. Ethical consent application

COLLEGE OF SOCIAL SCIENCES AND INTERNATIONAL STUDIES

When completing this form please remember that the purpose of the document is to clearly explain the ethical considerations of the research being undertaken. As a generic form, it has been constructed to cover a wide-range of different projects so some sections may not seem relevant to you. Please include the information which addresses any ethical considerations for your particular project which will be needed by the SSIS Ethics Committee to approve your proposal.

Guidance on all aspects of the SSIS Ethics application process can be found on the SSIS intranet:
https://intranet.exeter.ac.uk/socialsciences/staff/research/researchenvironmentandpolicies/ethics/

All staff and postdoctoral students within SSIS should use this form to apply for ethical approval and then send it to one of the following email addresses:

ssis-ethics@exeter.ac.uk This email should be used by staff and postdoctoral students in Egenis, the Institute for Arab and Islamic Studies, Law, Politics, the Strategy & Security Institute, and Sociology, Philosophy, Anthropology.

ssis-gseethics@exeter.ac.uk This email should be used by staff and postdoctoral students in the Graduate School of Education.

Applicant details	
Name	Nicholas Kirsop-Taylor
Department	Centre for Rural Policy Research
UoE email address	Nk305@exeter.ac.uk

Duration for which permission is required		
You should request approval for the entire period of your research activity. The start date should be at least one month from the date that you submit this form. Students should use the anticipated date of completion of their course as the end date of their work. Please note that retrospective ethical approval will never be given.		
Start date:01/01/2016	End date:29/09/2017	Date submitted:04/12/2015

Students only	
All students must discuss their research intentions with their supervisor/tutor prior to submitting an application for ethical approval. The discussion may be face to face or via email. Prior to submitting your application in its final form to the SSIS Ethics Committee it should be approved by your first and second supervisor / dissertation supervisor/tutor. You should submit evidence of their approval with your application, e.g. a copy of their email approval.	
Student number	640058238
Programme of study	Doctor of Philosophy (PhD)
Name of Supervisor(s)/tutors or Dissertation Tutor	Prof Michael Winter Dr Duncan Russel
Have you attended any ethics training that is available to students?	Yes, I have taken part in ethics training at the University of Exeter If yes, please give the date of the training:26/01/2015

Certification for all submissions

I hereby certify that I will abide by the details given in this application and that I undertake in my research to respect the dignity and privacy of those participating in this research. I confirm that if my research should change radically I will complete a further ethics proposal form.

Nicholas Kirsop-Taylor

TITLE OF YOUR PROJECT

"The ecosystem approach as a street level bureaucrat defined strategy for environmental management: a case study from the North Devon UNESCO Biosphere Reserve".

ETHICAL REVIEW BY AN EXTERNAL COMMITTEE

My research is not funded by, or doesn't use data from, either the NHS or Ministry of Defence; and so no ethical review by external committee is required.

MENTAL CAPACITY ACT 2005

My research project does not involve participants aged 16 or over who are unable to give informed consent (e.g. people with learning disabilities)

SYNOPSIS OF THE RESEARCH PROJECT

This is a research thesis for a Doctor of Philosophy co-funded by the University of Exeter and the Food and Environment Research Agency.

Synopsis

Taking 'an ecosystem approach' to the management of the natural environment is ubiquitous in contemporary environmental management research and practice. Paradoxically despite this wide use, it remains a poorly understood and utilised concept. The literature tells us that against its original Convention for Biological Diversity (CBD) form (A Multilateral Environmental Agreement (MEA) of which the UK is a member) it remains under-implemented at all scales of domestic governance. Indeed there remains little consensus about what 'taking an ecosystem approach' actually means in practice.

Specifically the CBD Ecosystem Approach offers a 'strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way'. This strategy is articulated through a series of twelve principles (the Malawi principles) accompanied by five points of operational guidance. Critically however, the ecosystem approach has been deemed by the CBD's conference of parties to not to require a 'hard' compliance regime. Instead, it used a 'soft' compliance regime. Whilst many 'soft' compliances reap successful domestic implementations, this study argues that this is not the case for the ecosystem approach, and that the adoption of a soft approach to compliance has been more a barrier than a boon to implementation.

There have been relatively few international and domestic UK studies seeking to understand the drivers of this implementation deficit. The results of these have tended to reach similar conclusions that ascribe the deficit to confusing language, poor governance, and limited case studies of best practice, and under resourcing. This research builds on these to suggest that at the street level the ecosystem approach is a confused concept in a confusing landscape of 'ecosystem jargon' that is poorly understood, and only partially used by environmental management practitioners.

Research questions

Whilst other studies have tended to start their investigations into this phenomena with an implicit statement of what the ecosystem approach is, and then gauge environmental managers compliance with this, this study suggests that this needs to be 'turned on its head'. Indeed, rather than being a top-down delivered concept that managers should be complying with, this study suggests that it has necessarily been forced into being a bottom-up crafted concept that is highly variable and dependent on the regional and local milieu. To understand the degree to which this may be true, it requires asking managers what they are taking the concept to mean:

1. *"What do environmental managers take the ecosystem approach to mean?"*

Some scholars suggest that taking an ecosystem approach necessitates following the Malawi principles strictly and others suggest a more pick and mix approach that uses whichever of these principles most suitable to the National situation and project specific requirements. Certainly, the later of these appears to be the preferred option of the UK government and the devolved administrations who now have responsibility for the domestic implementation of this policy. Many of these devolved regions are creating their own versions of the ecosystem

approach to ostensibly reduce the complexity of the CBD version and produce a better 'fit' with existing, or emergent regional environmental management policy priorities.

Whilst there have been some research studies investigating how the Malawi Principles are being implemented by organisations and projects across all the regions of the UK, there is a relative paucity of research investigating within a single devolved region using their specific devolved version. This therefore leads to the second ancillary question:

2. "*Which version of the ecosystem approach are environmental managers most associating with and using*?"

This study further suggests that the field of political science can offer many theories of bottom-up implementation that may support further understandings of the implementation deficit. Specifically it suggests that the Street Level Bureaucrat theory (SLB) of Lipsky (1980) could offer significant utility to this discourse. Lipsky's seminal theory suggests that the final implementation of policy is decided not by policy elites, but on the ground by 'street level bureaucrats'. Whilst there is a small body of research investigating the role of contemporary public and voluntary sector deliverers of policy framed under SLB theory, there is even less research investigating the role of environmental managers as SLB. This leads to the third ancillary question:

"*Do environmental managers behave as Street Level Bureaucrats in implementing the ecosystem approach*?"

RESEARCH METHODS

Three qualitative methods are going to be used sequentially within each organisation and with individuals from them. They are an organisational scale document analysis, a series of shadowing events and semi-structured elite interviews.

Case study Area

This study is adopting a case study approach. The case area is the UNESCO North Devon Biosphere Reserve, which congruent with the purpose of Biosphere Reserves, as 'living laboratories' for trialling new environmental management strategies and approaches, should offer a superlative opportunity for investigating the implementation of the ecosystem approach. Within the case area a total population of environmental management organisations (from

across all sectors) was created, and following a stakeholder analysis and purposive sampling exercise, a sample of primary participants has been created.

The researcher will establish contact with each organisation through a primary project sponsor. Gatekeepers at the Centre for Rural Policy Research provide the initial contact with project sponsors. If the project sponsor agrees to participate both individually and on an organisational scale, they become an intra-organisational gatekeeper. In this way, the project sponsor will act as a conduit for accessing the organisational documents (method one - below), as well as for supporting the 'snowball' recruitment of other participants from within their organisation (for methods two and three).

1. Document review

The first method is the collation and reviewing of documents about the organisation that reference the ecosystem approach.

Document collection

The project sponsor will identify, assemble and forward documents about their organisations interpretation on the ecosystem approach. Failing this, the researcher will seek out these documents from other gatekeepers or through desk based, researcher led investigation.

Document analysis

Following identification and collation, these documents are reviewed for qualitative information about their use, or opinions about the principles of the ecosystem approach. In this way, they will serve as both a primer about the organisations strategic position towards environmental management, as well as providing information about what they organisation thinks about itself in the context. Each document will be analysed within the NVivo software and coded in themes relating to the principles of the ecosystem approach, the points of operational guidance and the ecosystem services framework. These codes will specifically cover themes and language from both the CBD ecosystem approach, as well as the English national iteration of it.

2. Shadowing

The second method used is shadowing individuals from within the organisations at set piece events to observe and record their use of the ecosystem approach. Participants for shadowing will be both project sponsors, and workers within the organisation who are acting as SLB.

Recruitment procedure

The project sponsor will act as a conduit for the 'snowball' recruitment of participants from within their organisation. They will approach or communicative to intra-organisational colleagues the opportunity to voluntarily participate in the research (via conversation, emails or other intra-organisational medium). The researcher will contact those individuals who respond affirmatively to this opportunity to participate.

Procedure for shadowing individuals

Shadowing involves closely following an individual for a specific period. During this period, the researcher will record their comments, decisions and actions relevant to the subject areas a notebook. These notes are in a shorthand relevant to the qualitative data codes for the study, and are not verbatim. The entire shadowing exercise for each individual will be for a minimum of one day and a maximum of two days. The researcher and participant will agree at the outset which days in their schedule would be the most appropriate for witnessing evidence of the ecosystem approach in action and book shadowing days based upon these. Whilst shadowing the participant the researcher will continue to engage with them in context relevant conversations and remain open to whatever input they wish to offer.

Procedure for interaction with third-parties whilst shadowing

Whilst shadowing the individual participants the researcher will adopt an overt position. He will inform any third party member of the public, colleagues or clients of the participant that they meet that he is researcher from the University of Exeter researching the street level use of the ecosystem approach. If they want to know more about the details of the research, he will do so is appropriate in the situation. The researcher will reassure third parties that their comments, opinions and actions are not being recorded (unless they specifically ask these to be recorded), and will not be included in the final research.

Procedure for group situations

Similarly, there may arise situations where group meetings or events are relevant to studying the subject matter. In such situations, the group will be made aware of the

researcher by the participant (in a similar way to above procedure for meeting individuals) and his interest in shadowing a named individual within the group with the purpose of investigating how the ecosystem approach is being used at street level. Critically, they will be informed that if any of them do not want their names, details or comments recorded by the researcher, that they would be expunged from the transcript. If however any member of the group expressly opposes the presence of the researcher, he will not participate in the group event, and will reschedule another shadowing event with the participant.

3. Semi-structured interviews

Following the shadowing phase, the participant will take part in a semi-structured interview with the researcher. Semi-structured interviews offer an ability to build upon what has been observed about the organisation and the individual, and then test observations and hypothesis through reflexive questioning.

Interview procedure

A common set of structural questions are the basis for every interview. Crucially the semi-structured nature of the method allows for follow up questions, which facilitate context rich discourses to occur following each question, or following follow-up prompting, or exploratory questions.

Location

The researcher will conduct these interviews with the participant on site at their facility (where applicable). Similarly, where possible they will be conducted in private with no other people nearby, and recorded via digital recorder (mp3 files) which will later be transcribed by the researcher (into Word, before into NVivo). These interviews are primarily 'semi-structured', though the 'elite' nature of many of the participants may result in the interview being more 'unstructured' in nature as they lead discussion on the primary topics away from the set questions.

Reflexive approach

In conducting interviews, this study will be drawing heavily from the tradition of reflexive interviewing. Taking a reflexive approach to research is common to case study approaches and it plays an important role in this study. Similarly, the internal and structural bias brought to the study by the researcher is addressed appropriately in the discussion. Overarchingly, taking a reflexive approach allows for correlations between

participants revealed behaviours, the organisational best practice, and their expressed views to be identified and tested.

PARTICIPANTS

There will be between twenty to thirty participants, from within six to ten organisations. Only individuals seen as SLB within their organisation will be participants, though they may operate in different roles and at different levels within organisations. Indeed some of the participants may be operating as both 'elites' and SLB in this context. There is however no formal requirement for specific quota of individuals from different roles and grades.

Participants will be voluntary for both organisational sponsors as well as workers within the organisation. Only participants who consent to both the shadowing and the follow-up interview will participate. There will be no children under the age of eighteen or with learning difficulties participating. This study does not intend to sample participants with disabilities. If however any adults with a disability do participate, the researcher will ensure that they are shadowed and interviewed in situations that are within their existing role's remit, and with which they are entirely comfortable.

THE VOLUNTARY NATURE OF PARTICIPATION

This research upholds the principal of valid consent. The 'Participant consent and information forms' which participants are given to review before consenting to participate highlights this. This form expressly articulates:

- The purpose of the research: Disclosure on the overall aims of the research, what its outputs may be, and why it is being conducted. Participants may ask any additional questions regarding this to the researcher.
- Their right to withdraw: Participation is voluntary, and participants can withdraw at any point.
- Standards of anonymity: Any recorded, analysed and stored information participants disclose is anonymous. The specifics of the key and storage methods are given. None of their personal details will be included on the transcript of stored data.
- Standards of confidentiality: Any participant information and data is confidential, and treated as such.

The researcher will inform and remind all participants about the voluntary nature of participation at regular junctures, including primarily through the 'Participant consent and information forms' (see attached).

THE INFORMED NATURE OF PARTICIPATION

Before the start of the shadowing, the researcher makes clear the nature and aims of the research. The 'participant information and consent forms' articulate the nature of the research and its specific aims. The researcher will ask both project sponsors and SLB participants to review the form relevant to them; and if they still want to participate, then they should return the signed form to the researcher (who will ensure that they receive a copy of which).

Participants who request to stay appraised of the project can expect periodic updates. Similarly a final 'letter of thanks' will be sent to all participants upon completion of the data collection thanking them for their participation and updating them on the status of the project.

Project sponsors who agree in advance a summary report on the use of the ecosystem approach within their organisation can expect it delivered in a timely fashion (subject to the same rigorous standards of individual anonymity).

ASSESSMENT OF POSSIBLE HARM

Shadowing risks

Overarchingly there exist potential risks to the researcher where he shadows environmental managers to on-site locations. This could include farms or other rural locations. Ahead of starting, the research there is no way of knowing the likelihood of such visits, as it will be decided in collaboration with each individual participant ahead of the event. Therefore, to mitigate for it, ahead of any on-site shadowing events which introduce new risks above and beyond those listed here (and which aren't currently foreseen), a copy of the relevant risk assessment will be sought from the participant to ensure that the researcher is fully appraised and aware of the risks.

General risks

There are no significant risks of harm to the researcher beyond the normal and everyday risks. There are however the potential for minimal organisational and reputational risks for the organisations and individuals who participate. The risk register below highlights these risks.

DATA PROTECTION AND STORAGE

Integrity of anonymity and confidentiality

Data will be taken and help in accordance with the (1988) Data Protection Act. The 'data protection statement' on both of the 'Participant consent and information forms' highlights the key elements of data protection in the study. Overarchingly, a rigorous data protection protocol will ensure anonymity and confidentiality.

An encrypted and password protected spreadsheet, that correlates to a randomised unique identifier (or a 'tag'), records the names and contact details of individual participants. The researcher will hold this spreadsheet on a password-protected computer. Only the researcher will know the password and code for this identification system, (i.e. participant # 1, participant # 2). Similarly, any direct quotations used in the text of the thesis will be anonymised, and referenced to the corresponding identifier tag.

Participants who wish to review their interview transcripts before final submission will be given a week to do so. There will be no physical record of the transcripts of the interviews held beyond the completion of this study. These will disposed of in a secure manner *as per* University of Exeter guidance.

Subsequent publications will not use the names or contact details of individuals. The names of organisations will only be used in subsequent publications (including dissertation, research papers and conference materials) if written consent has been given.

Electronic data storage

The electronic data collected in this study will be held (fully anonymised) in password encrypted files on the University of Exeter u-drive. The u drive will also separately hold and store a password encrypted contact file. These electronic records will be securely stored indefinitely. The 'Participant consent and information form' informs participants of this, as does their follow-up 'letter of thanks' upon completion of the data collection exercise.

DECLARATION OF INTERESTS

There is a paragraph stating the aim and purpose of the research on the 'SLB Participant consent and information form' that is given at the outset. This reads:

"*This research is co-funded by The University of Exeter and the Food and Environment Research Agency. The information it collects will help to better inform the debate about the environmental management strategies be used in the UK, and specifically how the ecosystem approach of the Convention on Biological Diversity is interpreted and implemented at the streetlevel. The results of this work will be used as part of a doctoral thesis, as well as to facilitate the creation of academic papers published in specific academic journals. It may also be used in a limited number of presentations and conference reports*."

Following this, the researcher offers participants the opportunity to ask any questions they want about the study, its aims and objectives. A similar, but slightly elaborated statement is included on the 'Sponsor Participant consent and information form'.

USER ENGAGEMENT AND FEEDBACK

Similarly, the 'Participant consent and information forms' also includes a paragraph about user engagement and feedback:

"*Interview tapes and transcripts will be held in confidence. They will not be used other than for the purposes described above and third parties will not be allowed access to them (except as may be required by the law). However, if you request it, you will be supplied with a copy of your interview transcript so that you can comment on and edit it as you see fit (please give your email below so that I am able to contact you at a later date*)".

INFORMATION SHEET

A combined 'participant consent and information form' has been created for this research. This form is in two versions, one for the SLB environmental management workers, and one version for the project sponsors acting as participants. Copies of both are attached to this application. Following the completion of the data collection, each participant will receive a standard one-page letter of thanks from the researcher. This will thank them for taking the time to participate, it will restate the confidentiality and anonymity, and give an update on what is next for the study.

CONSENT FORM

Full written consent will be asked for, and obtained, from participants before the shadowing exercise. The researcher will obtain this via the 'Participant consent and information forms', which participants will be asked to sign to agree their consent to participate.

SUBMISSION PROCEDURE

Staff and students should follow the procedure below.
In particular, students should discuss their application with their supervisor(s) / dissertation tutor / tutor and gain their approval prior to submission. Students should submit evidence of approval with their application, e.g. a copy of the supervisors email approval.

This application form and examples of your consent form, information sheet and translations of any documents which are not written in English should be submitted by email to the SSIS Ethics Secretary via one of the following email addresses:

ssis-ethics@exeter.ac.uk This email should be used by staff and postdoctoral students in Egenis, the Institute for Arab and Islamic Studies, Law, Politics, the Strategy & Security Institute, and Sociology, Philosophy, Anthropology.

ssis-gseethics@exeter.ac.uk This email should be used by staff and postdoctoral students in the Graduate School of Education.

Annex H. Results of semi-structured biosphere reserve-scale interviews

Biosphere Reserve Interviews

Organisation name	Participant number	Interview method	Organisation size (local)	Organisation type	Classification	Documents	Gender	Education	Professional background
North Devon UNESCO Biosphere Reserve	*n* = 4	Face to face	Micro	Voluntary	Insider	*n* = 5			
	P4						M	Postgraduate	Farming
	P6						M	Undergraduate	Ecology
	P12						M	Postgraduate	Ecology
	P34						M	Undergraduate	Ecology
National Trust	n = 3	Face to face	Medium	Voluntary	Insider	*n* = 2			
	P20						M	Postgraduate	Landscape/heritage
	P25						M	Undergraduate	Landscape/heritage
	P29						M	Postgraduate	Landscape/heritage
Devon Wildlife Trust	*n* = 2	Face to face	Medium	Voluntary	Insider				

	P13						M	Postgraduate	Ecology
	P32						F	Postgraduate	Ecology
North Devon/Torridge district Council	*n* = 2	Face to face	Large	Public	Insider	*n* = 4			
	P2						M	Postgraduate	Planning
	P5						M	Postgraduate	Planning
North Devon AONB	*n* = 2	Face to face	Micro	Voluntary	Insider	*n* = 1			
	P15						F	Doctorate	Landscape/heritage
	P16						M	Postgraduate	Landscape/heritage
Northern Devon Nature Improvement Area	*n* = 2	Face to face	Micro	Voluntary	Insider	*n* = 1			
	P3						F	Postgraduate	Ecology
	P9						M	Undergraduate	Ecology
Independents	*n* = 2	Face to face	*na*	*na*	Insider	*n* = 1			
	P1						F	Postgraduate	Ecology
	P8						M	Doctorate	Landscape/heritage

Natural England	*n* = 1	Face to face	Medium	Public	Insider	*n* = 1			
							M	Postgraduate	Ecology
Beaford Arts	*n* = 1	Face to face	Micro	Voluntary	Insider	*n* = 1			
	P17						M	Postgraduate	Arts
Exmoor National Park	*n* = 1	Face to face	Small	Public	Outsider	*n* = 1			
	P10						F	Postgraduate	Ecology
Forestry Commission	*n* = 1	Face to face	Medium	Public	Insider	*n* = 1			
	P7						M	Undergraduate	Ecology
Devon County Council/ Natural Devon	*n* = 1	Face to face	Small	Public	Insider				
	P31						F	Postgraduate	Ecology
Taw and Torridge Estuary Forum	*n* = 1	Face to face	Micro	Voluntary	Insider				
	P26						M	Undergraduate	marine

Coastwise	*n* = 1	Face to face	Micro	Voluntary	Insider	*n* = 1			
	P21						M	Postgraduate	Ecology
Barnstaple Chamber of Commerce	*n* = 1	Face to face	Micro	Private	Insider				
	P33						M	Undergraduate	Business
Inshore Fisheries Conservation Agency	*n* = 1	Face to face	Medium	Public	Insider				
	P27						F	Postgraduate	Marine
Environment Agency	*n* = 1	Face to face	Large	Public	Insider				
	P14						M	Undergraduate	Ecology
West Country Rivers Trust	*n* = 1	Face to face	Micro	Voluntary	Insider				
	P28						M	Doctorate	Ecology
FWAG SW	*n* = 1	Face to face	Medium	Voluntary	Outsider				
	P37						M	Postgraduate	Farming

National Farmers Union	*n* = 1	Face to face	Medium	Voluntary	Insider				
	P35						M	Undergraduate	Farming

Annex I. Results of biosphere reserve elite national-scale interviews

National interviews

Organisation name	Participant number	Interview method	Organisation size (local)	Organisation type	Classification	Documents	Gender	Education	Professional background
The University of Liverpool	n = 1 P23	Face to face	*na*	Voluntary	*na*	*na*	M	Doctorate	Academia
Scottish Natural Heritage	n =1 P30	Face to face	*na*	Public	*na*	*na*	F	Postgraduate	Government
Natural resources Wales	n = 2		*na*	Public	*na*	*na*			
	P39	Face to face			*na*		M	Postgraduate	Government
	P40	Telephone			*na*		M	Doctorate	Government
Ecosystems knowledge network	n = 2		*na*	Voluntary	*na*	*na*			
		Telephone			*na*		M	Postgraduate	
		Telephone			*na*		F	Undergraduate	
Natural England	n = 1 P38	Telephone	*na*	Public	*na*	*na*	F	Doctorate	Government
University of Birmingham	n = 1 P24	*Skype*	*na*	Voluntary	*na*	*na*	M	Doctorate	Academia
Natural Capital Committee	*n* = 1 P38	Face to face	*na*	Voluntary	*na*	*na*	M	Doctorate	Academia
James Hutton Institute	*n* = 1 P28	Telephone	*na*	Voluntary	*na*	*na*	F	Doctorate	Academia

Annex J. Analytical node framework

Critical Pathway	Secondary nodes		Peripheral nodes	
Parent	Parent	Child	Parent	Child
What is the ecosystem approach	North Devon Biosphere	Successes	Politics	Brexit
Is your definition a consistent definition		Challenges		Austerity
Is the ecosystem approach 'policy'		What is the biosphere		Government
Have you been given guidance or support on its operationalisation		MAB programme		Defra
Is ecosystem approach being used in biosphere		Governance	About participant	Role - career
What motivates you to use or consider it in practice		Brand		About organisation
Are you free to interpret it situationally		Living laboratory		Change over career

		Leadership	Land between moors	Farming in the land between the moors
		Actions to improve		Business in the land between the moors
		Biosphere partnership		Planning in the land between the moors
	Natural Capital	Ecosystem services	CBD	
		Market based tools	Case studies	
	Integrated management	In practice	Environmental sector	
		Concept		
		As policy		
		Motivation - drivers		
		Landscape scale		
		Outcome 1C self-assessment		
		Community engagement		
	Ecosystem approach	EsA concept		
		EsA Principles		

		Ecosystem science	
		Devolved interpretations	
		Data and monitoring	
		Adaptive management	
		Problem-solutions	
		Inheritors to EsA	

Annex K. Ecosystem approach information sheet

CBD's principles of an ecosystem approach

Principle 1: The objectives of management of land, water and living resources are a matter of societal choices.

Principle 2: Management should be decentralized to the lowest appropriate level.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Principle 6: Ecosystem must be managed within the limits of their functioning.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Principle 9: Management must recognize the change is inevitable.

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

CBD's points of operational guidance

1. Focus on the relationships and processes within an ecosystem
2. Ensure benefit sharing
3. Use adaptive management practices
4. Carry our actions at the scale appropriate for the issue being addressed, with decentralization to the lowest level where appropriate
5. Ensure inter-sectoral cooperation

Defra principles of taking an ecosystem approach

Principle One: Taking a more holistic approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services

Principle Two: Ensuring that the value of ecosystem services is fully reflected in decision-making

Principles Three: Ensuring environmental limits are respected in the context of sustainable development, taking into account ecosystem functioning

Principle Four: Taking decisions at the appropriate spatial scale while recognizing the cumulative impacts of decisions

Principle Five: Promoting adaptive management of the natural environment to respond to changing pressures, including climate change

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